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The Genesis of Conduct Disorders in Early Adolescence:
A Multi-factoral Approach

by

William David Gemmell

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ABSTRACT

This study examines the genesis of conduct disorders in early adolescence using the National Longitudinal Survey of Children and Youth gathered by Statistics Canada. Logistic regression is performed on the data to discover the separate contributions that structural, individual and social control components have on conduct disorders. The findings suggest that conduct disorders are caused by both psychogenic and sociogenic factors which leads the investigator to conclude that future criminological research should be developed within a multi-disciplinary approach.

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For my parents
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TABLE OF CONTENTS

Approval Page.....	ii
Abstract.....	iii
Acknowledgements.....	iv
Dedication.....	v
Table of Contents.....	vi
List of Tables.....	vii
List of Figures.....	viii

CHAPTER ONE: CURRENT RESEARCH ON THE CAUSES OF DELINQUENCY

1.0 Introduction.....	1
1.1 Controversies in Criminological Theory.....	3
1.11 Biological Contributions to Antisocial Behaviour.....	4
1.12 Strain Theory.....	6
1.13 Social Learning Theory.....	8
1.14 Interactional Theory.....	10
1.15 Developmental Theory.....	11
1.16 Social Control Theory.....	13
1.17 The Life-Course Perspective.....	15
1.2 The Great Debate.....	21
1.21 The Stability of Criminal Propensities.....	22
1.22 Crime and Criminality.....	26
1.23 Research Designs: Longitudinal versus Cross-Sectional Methods.....	29
1.24 Testing the General Theory in the 1990's.....	31
1.3 Reconciling the Controversy.....	35
1.31 Modelling Structural Contributions.....	36
1.32 Modelling Individual Contributions.....	37
1.33 Modelling Social Control Contributions.....	37

CHAPTER TWO: TESTING AN INTEGRATED THEORY OF CRIME

2.0 The National Longitudinal Survey of Children and Youth.....	39
2.1 Cross-sectional and Longitudinal Designs.....	41
2.2 Concepts and Definitions.....	42
2.3 Dependent Measures: Conduct Disorders.....	42
2.4 Independent Measures.....	44
2.41 Structural Components.....	45
2.42 Individual Components.....	47
2.43 Social Control Components.....	50
2.5 Multiple Regression: Three Phase Methodology.....	53
2.51 Phase One: Assessing Validity.....	54
2.52 Phase Two: Assessing Stability across Age and Gender.....	55

2.53	Phase Three: Exploring Interactions of Delinquent Behaviour.....	56
CHAPTER THREE: THE GENESIS OF CONDUCT DISORDERS		
3.0	PHASE I	
3.01	Validation of Previous Research: Common Correlates.....	60
3.02	Contributors of Aggressive Behaviour.....	62
3.03	External Validity.....	68
3.04	Contributors of Property Offenses.....	73
3.05	Internal Validity.....	76
3.06	The Debunking of Specialization.....	77
3.1	PHASE II	
3.11	Effects across Age Categories: Stability...	77
3.12	Effects across Gender Categories: Are Boys and Girls Different?.....	88
3.2	PHASE III	
3.21	The Interactive Association between the Family and the Child.....	90
CHAPTER FOUR: CONCLUSION		
4.0	Measurement Considerations.....	93
4.1	Substantive Considerations.....	94
4.2	Future Research.....	96
Notes		98
Bibliography.....		100

LIST OF TABLES

Table 1: Competing Perspectives on Antisocial Behaviours.....17

Table 2: Logistic Regression Exponential Coefficients (children age 10 and 11) of Aggression on Structural, Individual, Social Control, Saturated, and Trimmed Models.....64

Table 3: Logistic Regression Exponential Coefficients (children age 10 and 11) of Property Offenses on Structural, Individual, Social Control, Saturated, and Trimmed Models.....74

Table 4: Logistic Regression Exponential Coefficients of Aggression on Structural, Individual and Social Control Models (trimmed) across Age Categories..78

Table 5: Logistic Regression of Aggression on Structural, Individual, and Social Control Models with Interaction Effects between Hostile Parenting and Hyperactivity.....91

LIST OF FIGURES

Figure 1: Structural Contributions to Antisocial Behaviour.....	36
Figure 2: Individual Contributions to Antisocial Behaviour.....	37
Figure 3: Social Control Contributions to Antisocial Behaviour.....	38
Figure 4: Mean Aggression across Ages.....	61
Figure 5: Mean Hyperactivity across Ages.....	83
Figure 6: Mean Emotional Disorder across Ages.....	84
Figure 7: Mean Prosocial Behaviour across Ages.....	85
Figure 8: Mean Hostile Parenting across Ages.....	86

CHAPTER ONE: CURRENT RESEARCH OF THE CAUSES OF DELINQUENCY

Introduction

There is a continuum of social order that is bordered by anarchy and chaos on one extreme and harmony on the other. Sociologists and philosophers have wrestled with the problem of order to understand how it is that individuals come to agree to live together in society. Consequently, social theories have the ability to profoundly shape the course of human existence because the knowledge gained from these theories can provide the impetus for social change. In the field of criminology, social order is of great importance but there is a tradition of theoretical debate that has impeded social change because the issues surrounding crime and society are obscured. This analysis is designed to shed new light on some of the controversy and illustrate that those involved in the debate are not as far apart as they might appear.

Crimes can be defined as acts that deviate from social order. However, this should not imply that crimes in and of themselves are "bad". In fact, "crimes" may contribute to increases in social order (Durkheim, 1933). For example, individuals can come together and engage in communal deviance in order to change public policy. History provides many examples of this kind of civil disobedience (i.e. Tianamen Square in China). We might argue then that deviation from norms and values of a community are to be

expected. Moreover, we need to question whether we would all have to be "the same" in order to achieve total cooperation, cohesion and consensus. However, we are not all "the same" and as a consequence, norms and values of the community are instilled as "rules" that are set up to govern our behaviour. When these rules are violated by the individual, the community acts against this "antisocial" behaviour in a punitive manner. However, it is often unclear how the community is to act in an effective manner so as to discourage antisocial behaviour because as Wilson and Herrnstein (1985) point out, "the motives of criminal (and of human) behaviour are as varied as the behaviour itself" (p.39). Since biological, developmental, and environmental influences are all considered to be, and debated as possible determinants of antisocial behaviour, the central purpose of this examination is to uncover and illustrate the genesis of antisocial behaviour. The first step in this process is to analyze the different criminological theories engaged in this debate.

Further, this analysis will compare the psychogenic and sociogenic contributions to criminal theory and examine these perspectives to see if there are any systematic patterns that indicate whether or not an individual can be predicted to engage in deviant behaviour. Ultimately, it is hoped that this project will illustrate how the psychogenic and sociogenic models of antisocial behaviour simultaneously

cause conduct disorder. Conduct disorder is of some theoretical importance because it is thought to precede delinquency and because such personal tendencies are thought to be stable over the life-course. In addition, it is also possible to show that these sociogenic and psycho-genic forces interact with each other and, in turn, compound the problems associated with finding the causes of conduct disorder and delinquency.

Controversies in Criminological Theory

Gottfredson and Hirschi (1990) propose A General Theory of Crime that clearly implicates "self-control or impulsivity" as the prime determinant of criminal behaviour. This parsimonious explanation has been attacked from several different perspectives because many scholars in the field believe that behaviour is much more complex than they suggest. However, since the publication of their theory, it has become a major focus for the study of crime.

Prior to Gottfredson and Hirschi's general theory, the field of criminology was fraught with many competing sociological theories that vied for supremacy. Consequently, the explanation of antisocial or criminal behaviour was as varied as the sociological tradition. Biological theories, strain theory, learning theory, interactional theory, developmental theory, social control theory and the life-course perspective have competed for attention so as to advance their own stature in the

criminological community.

This examination begins with a review of these theories focusing on developmental, social control and the life-course perspectives. It then moves to the contribution each brings to the debate and finishes with an attempt to reconcile some competing elements in the controversy. A thorough understanding of these issues provides the framework for the design and testing of specific hypotheses regarding the genesis of antisocial behaviour.

Biological Contributions to Antisocial Behaviour

A central question concerning antisocial behaviour revolves around whether there is such a thing as a "born criminal". That is, is there a particular genetic make-up of an individual that would prevent that individual from engaging in criminal behaviour? The importance of this question is that, if criminals are "born", then there is little that we, as a society, can do to prevent crime. In fact, the prevention of criminal behaviour must be disregarded in favour of treatment and intervention strategies such as confinement, supervision, and medical therapy.

Findings in the biological field suggest that criminals, specifically prisoners, tend to have a different body structure than the general population¹ (Wilson and Herrnstein, 1985). Cesare Lombroso (1835-1909) pioneered the field of biological criminality by describing criminals

as "atavisms...[or] throwbacks to an earlier stage of evolution" (Linden, 1987:111). Moreover, Lombroso suggested that these individuals were destined by these inherited traits to engage in crimes (See criticisms in Gould, 1981).

In addition to anatomical findings, it is clear from any analysis that males engage in criminal behaviour at a far greater frequency than females. Wilson and Herrnstein (1985) state that "typical males are more aggressive than typical females" (p.118) and "aggressiveness correlates with male criminality" (p.117). This biological argument is strongly supported by the two central ideas that biology is at work because (1) the sex differences in aggression are apparent in all human (and most animal) societies and (2) the differences are found very early in life, predating important socialization periods (Wilson and Herrnstein, 1985:117).

The biological arguments in criminology offered by Wilson and Herrnstein (1985), Murray and Herrnstein (1994), Raines (1993) and many others, seem to have a great deal of face validity. However, the relative contributions of biology are questioned based on the notion that it is difficult to theoretically justify how individuals can be biologically predisposed to breaking "socially constructed" laws. Moreover, the implications of the biological argument are ethically disturbing. If, for example, we are successful in finding a definitive biological cause of

criminal behaviour, should we eradicate these individuals (as was done in the Nazi eugenics program), or should those at risk be sterilized (as was done in Alberta) to control the "feeble minded" or, could we simply genetically alter this trait and treat its expression as a clinical disorder? It seems that each of these solutions pose an ethical dilemma that most people are simply not willing to entertain.

The dubious consequences associated with "biological determinism" empowers the more politically appealing social causes of antisocial behaviour insofar as society, social institutions and the individual can be "changed" in a more ethical fashion. Moreover, there are other problems with biological explanations of crime: (1) the evidence of biological causation is not very convincing, and (2) if antisocial behaviour is biologically based, why does it follow such predictable social structural patterns related to things such as class and ethnicity?

Strain Theory

Some of the earliest work in strain theory was Durkheim's (1951 [1897]) notion of "anomie" which suggests that social regulation and social integration work together at an equilibrium so as to produce an harmonious balance whereby individuals can function appropriately within society. Further work by Merton (1968) in the area of structural functionalism describes the processes by which

individuals are compelled to adhere to social institutional constraints. According to Merton (1993) "when there occurs a shift of emphasis ... the resultant stress leads to the breakdown of the regulatory structure" (p.126). In fact, Merton classified five "modes of adaptation" to the social structure. He suggested that behaviour spans from conformity to innovation to rebellion to retreatism and finally to ritualism (Akers, 1994). Merton's typologies reflect the gap between an individual's aspirations and the means available to obtain those aspirations. Merton hypothesised that if the gap between aspirations and means is large, then those individuals will "innovate" in some manner to develop some means of obtaining their wants. This is a serious theoretical construct in light of our society's emphasis on material desires. Those individuals living in poverty are especially susceptible under Merton's "modes of adaptation". As Linden (1987:160) clearly states: "when society encourages people to want things, but makes it difficult for certain groups to get them, these groups are more likely to resort to criminal behaviour".

While strain theory is interesting from the criminological perspective, it has not enjoyed a great deal of support from the criminological community because the theory is not supported by the evidence. For example, while poverty has been shown to be correlated with criminal activity (as strain theory would suggest), it is not clear

that there is any direct causation. That is, other causes such as policing practices and discrimination play an important role as intervening causes of crime. As Akers (1994:157) points out, the "discrepancy [between aspirations and means] seems to be only weakly related to delinquency." More striking is the lack of results from the studies of "job theory" (Berk, Lenihan and Rossi, 1980) where some ex-offenders are randomly assigned jobs and others are not. According to Gottfredson and Hirschi (1990:p.139) "differences in crime rates [resulting from these experimental conditions] are small, nonexistent or even in the wrong direction."

Social Learning Theory

Much like structural strain theories, sociologists, psychologists and criminologists, find learning theories to be seductive because, if they are correct, then, criminal behaviour can be "unlearned". In addition, common sense leads most people to easily grasp the learning theories because we all understand that learning is a basic human trait. Children must be taught to do things: how to tie their own shoes, how to read, how to write and, how to steal a car.

Sutherland's (1974) differential association theory is the result of his pioneering work in the area of crime. Sutherland (1974) suggested that criminal behaviour is learned. In essence, individuals interact with conforming

and nonconforming others that in turn effect how "favourable conditions" are defined and whether adolescents adopt illegal or law abiding outlooks. Akers (1994:106) suggests that violations of social and legal norms occur

when persons differentially associate with those who expose them to deviant patterns, when deviant behaviour is differentially reinforced over conforming behaviour, when individuals are more exposed to deviant than conforming models, and when their own definitions favourably dispose them to commit deviant acts.

Moreover, Akers (1996:239) states,

social learning theory proposes that reward/punishment contingencies shape both one's attitudes and overt behavioral repertoire over time and provides the motivation to engage or refrain from action at a given time and place.

The appeal of learning theories may stem from the potential for the "social correction" of criminal behaviour. That is, if society is able to stop criminal "teachings", then criminal behaviour can be prevented. However, the history of resocializing the criminal into a non-criminal role has been dismal. Rehabilitation, deterrence, and incapacitation have all failed to eliminate crime and consequently point to a need for a comprehensive understanding of criminality. Gottfredson and Hirschi (1990:257-258) point out that the "failure of rehabilitation

led" to a rise in popularity of a "deterrence school" of thought which, in turn, led to an interest in "incapacitation". Unfortunately, as they state, effective "incapacitation policy requires identification of chronic offenders before they have committed their crimes" (1990:259) because incapacitation rests on the idea of limiting the criminal opportunities of individuals.

Interactional Theory

As an enhancement to learning theories, Thornberry (1987) proposes the integration of competing explanatory models. Here we see an integration of social structure, social bonding and social learning theories to produce what he called an "interactional theory" of criminal behaviour. Ultimately, this technique of combining theoretical models may prove useful, not only in an additive sense, but also in an interactive sense. That is, each model may individually contribute to the explanation of criminal behaviour while simultaneously showing the interaction effects of competing explanations. Specifically, Thornberry (1987) suggests that individuals will be exposed to structural constraints, social bonding and learning influences that will create antisocial behaviour that increase at an additive and multiplicative rate.

The major source of criticism for Thornberry's work is in relation to his findings that show only weak associations with criminality. However, it would seem that the important

point of departure for this perspective is that it is an a priori explanation of behaviour. That is, while it is widely agreed that delinquent peers and delinquent beliefs are correlated with delinquency (Thornberry, Lizotte, Krohn, Farnworth, and Jang, 1994, p.48), there seems to be a missing initialization component from this perspective. If delinquent peers and beliefs operate in a reciprocal manner, it is unclear which one is instilled first. This is highly important because without the knowledge of temporal ordering, causation is not determinable and subsequently, preventing the behaviour becomes impossible.

Developmental Theory

Unlike learning theories, developmental theories seek to uncover the genesis of antisocial behaviour. Developmental theories assert that one of the principal aspects of human development is that there is both "physical and mental growth that generally occurs through an orderly progression" (Gleitman, 1987, p.367). If however, there are any interruptions throughout this developmental period, growth is arrested. The "criminal" then, is created as a result of some developmental deficiency. This view was endorsed by Glueck and Glueck (1950), Sampson and Laub (1993), and to some extent in the general theory of Gottfredson and Hirschi (1990).

Patterson, DeBaryshe, and Ramsey (1989) note that "antisocial behaviour appears to be a developmental trait

that begins early in life and often continues into adolescence and adulthood" (p.329). They suggest that our task as social scientists is to "determine which mechanisms explain the stability of antisocial behaviour and which control changes over time" (p.329). The mechanisms that explain the genesis of antisocial behaviour are closely associated with early childhood socialization processes. For example, according to Smith and Thornberry (1995), initial studies of the relationship between child maltreatment and delinquency have produced wide varying results "ranging from 10% to 85% - of the proportion of delinquents who have a maltreatment background" (p.452). They report, however, that "overall, maltreatment appears to be a risk factor for the more serious forms of delinquency and not to be a risk factor for the less serious forms of delinquency" (p.465).

Moffitt (1990) examined the effect of Attention Deficit Disorder on antisocial behaviour, low verbal intelligence, reading difficulty and family adversity in an effort to discover why some adolescents who engage in antisocial behaviours "go on to be adult criminals, but most do not" (p. 893). Moffitt's findings lead directly to the need for a further understanding or clarification of the developmental model because the results are inconclusive. That is, while early social development contributes to the explanation of the genesis of antisocial behaviours, the desistance from these behaviours remains unclear in the

developmental approach because it only addresses those who do engage in criminal behaviours. It is not clear why some with the same backgrounds do not engage in the same behaviours.

Social Control Theory

Since Emile Durkheim (1951 [1897]) asked why and how social norms worked to control the behaviour of individuals, control theories have enjoyed a substantial appeal in criminology. This may be due in part to the fact that control theories do not try to answer why individuals commit criminal acts, but rather ask the opposite question: why do individuals conform to social and legal norms? As theories of social behaviour, control theories suggest that there are external and internal forces working on the individual that apply pressure to conform to social norms and values. These forces exert "controls" upon individuals to behave in particular ways. The greater the amount of pressure, then the greater the conformity to social and legal norms.

Hirschi's (1969) contribution to control theory was that of the social bond which stressed four elements: emotional attachment, conforming involvement, normative commitment and prosocial beliefs. These external forces structure the opportunities and the social ties of adolescents during their formative years. It is in these formative years that individuals develop a sense of social order. In essence, weak bonds lead to antisocial behaviour.

However, this seems to be learning by default. That is, social bonds provide the impetus for "social control as the capacity of a social group to regulate itself" (Sampson and Laub, 1993, p.18) which is in essence, a teaching process. According to Laub and Sampson (1993) "the central idea of social control theory [is] that crime and deviance are more likely when an individual's bond to society is weak or broken" (p.303).

However, Gottfredson and Hirschi (1990) move the traditional control theory into a different realm with their work, A General Theory of Crime. They move the "control" function from the "social" to the "self". According to Gottfredson and Hirschi (1990), criminal behaviour is the result of low self-control and impulsiveness. They suggest that self-control is an individual trait that is either turned on, (or not), during early socialization periods. Specifically, parents have a window of opportunity, until about age eight, to instill self-control into their children. They state that their theory "emphasizes the stability of differences in self-control across the lifespan, differences that are established very early in life" (p.255). If self-control is not established effectively, the propensity to engage in criminal behaviour is immutable. That is, those who do not possess self-control will be "vulnerable to the temptation of the moment" (p.87) throughout their lives.

The Life-Course Perspective

The life-course perspective might be seen best as a developmental theory that extends into adulthood. Sampson and Laub (1993) offer an alternative model to Gottfredson and Hirschi (1990) that suggests that while parental influences are important contributors to juvenile delinquency, it is the juvenile behaviour that predicts adult criminal behaviour. In other words, past behaviour is the best predictor of future behaviour. Their evidence suggests that even where impulsivity and self-control are low, adults can be successfully integrated to society by way of "social capital". That is, developing a strong relationship through marriage or through establishing strong relationships with an employer may help the individual who is prone to misconduct to reintegrate into the community. While this position seems to be an elaboration of Gottfredson and Hirschi's theory, a serious intellectual debate has developed around the idea that early childhood development can be altered at some later date in life.

To illustrate and summarize the competing explanations, Table 1 encapsulates the major paradigms described in this review. Structural and developmental models, while not completely exclusive, are central to the sociogenic determinants of antisocial behaviours, and individual explanations are central to the psychogenic determinants of these behaviours. In each case, the position that the

perspective assumes, the anomalies of the perspective, the most often associated variables used, and the implications of these positions are summarized. With a thorough understanding of the competing perspectives, we can move into the debate surrounding these positions.

TABLE 1: COMPETING PERSPECTIVES ON ANTISOCIAL BEHAVIOURS

Perspective	Position	Anomalies	Variables	Implications
Biological Theories (e.g. Raines, Lombroso, Wilson and Herrnstein, Murray and Herrnstein)	Individuals are predisposed to criminal activities based on brain and body chemistry as well as body development that are largely inherited and are immutable.	Overall, the conclusions are weakly supported and often seem to be spurious. If crimes are "social products" - how is biology logically explained? It is still very poorly understood.	Intelligence, testosterone, serotonin and other neurotransynaptic transmitters. Gender, Age, Personality	Since the traits are immutable, then the only way to eradicate crime is to (1) clinically intervene and treat and (2) control through confinement or supervision.
Strain Theories (e.g. Merton, Agnew, Sykes and Matza)	Social Structural Determinants/ Structural Functionalism/ Means-Ends orientation macro determinants of crime (i.e. opportunity and culture)	Theory not strongly supported by evidence (i.e. poverty not considered an immediate cause of delinquency) Ignores the dynamic nature of human interaction	Class Urban /rural Education Deviance Vocabularies of Disavowal	Change in the social structure should result in behavioral changes.

Perspective	Position	Anomalies	Variables	Implications
<p>Interactional Theories and Learning Theories (e.g. Sutherland, Thornberry, and Akers)</p>	<p>Individuals are primarily influenced by interactions and the meanings they find in those interactions. Labelling of deviants. Juvenile delinquent "subcultures". Delinquents learn from other delinquents. Career criminals.</p>	<p>How are delinquent interactions conceived? Examination of the individual after delinquency has occurred. Causal ordering is not clear. Very little evidence that deterrence or rehabilitation is successful.</p>	<p>Deviant interactions -peers -siblings -parents Meanings associated with the interactions. Stigmatization.</p>	<p>Altering and controlling the interactions of individuals should result in behavioral changes.</p>
<p>Developmental Theories (e.g. Moffitt, Zingraff et al, and Loeber)</p>	<p>Early childhood socialization processes lead to the onset, continuation and possible desistance from criminal activities. Also implicated are developmental "injuries" (i.e. fetal alcohol syndrome, attention deficit disorder, hyperactivity, dissociation disorders etc.)</p>	<p>Human experiences are varied to such an extent that it is unclear how patterns of behaviour are established. Does not explain how the same experiences account for differences in behavioral outcomes.</p>	<p>Family processes, Social Supports Interactions Hostile parenting types of experiences and modes of influence. Prenatal and birth traumas. Child abuse and neglect.</p>	<p>Once the development has occurred it becomes extremely difficult to alter the effects. Focus is on early developmental stages of life.</p>

Perspective	Position	Anomalies	Variables	Implications
<p>Control Theories -self-control -social control (e.g. Hirschi, 1969, Gottfredson and Hirschi, 1990, and Grasmick et al)</p>	<p>Social bond in families reduces the risk of delinquency in offspring. Effective families produce children with high self-control. Monitoring, recognising and punishing inappropriate behaviour is critical. Emphasizes the efficiency and validity of cross-sectional research.</p>	<p>Problems with the construction of non-tautological independent and dependent measures (i.e. criminality as cause and effect.) No account for motivations. Discount social structure outside of the family.</p>	<p>Impulsivity Family Functioning Community institutions Parental Supervision Parental Discipline Schooling Religion Attachments, commitments, involvement and beliefs are examined.</p>	<p>Altering the control mechanisms that affect antisocial behaviours could eliminate the behaviour if undertaken before age 8 and within the family.</p>

Perspective	Position	Anomalies	Variables	Implications
<p>Life-Course Theories (e.g. Sampson and Laub)</p>	<p>Primarily differentiated from the developmental theories in that the influence of informal social control is extended through childhood into adolescence then into adulthood. Combination of structural, psychological and process variables. Suggests there are pivotal life experiences that cause 'trajectories' that govern behaviour. Stresses the importance of longitudinal research to obtain the moments of trajectories.</p>	<p>Very complex (like developmental approach). Does little to explain how some have similar experiences but behave differently.</p>	<p>Social Capital (informal social control, social structure, etc.) Family processes Individual characteristics Juvenile Outcomes Adult Development</p>	<p>Finding central contributors both at early and later stages of life provide a vehicle to predict and potentially mitigate future behaviour in spite of the stability theorem.</p>

The Great Debate

It appears that two camps of thought have developed in the field of criminology. Tittle (1988:75) succinctly points out that,

the two camps clearly disagree about five things: (1) the value of and prognosis for selective incapacitation policy, (2) the empirical validity of an invariant age/crime association, (3) the relative usefulness of longitudinal and cross-sectional data, (4) the wisdom of programmed research by government agencies, and (5) the theoretical significance of criminal careers research.

For example, Matsueda's (1992:1577) interactionist perspective suggests that it is important to study the "mechanisms by which informal groups control the behaviour of members". Matsueda (1992:1602) uses the concepts of Mead (1934) and Cooley (1922) to test whether "conceptualization of reflected appraisals" affects involvement in delinquency. While Matsueda (1992) finds support for his hypotheses, it is evident that this perspective is similar to the findings suggested by Gottfredson and Hirschi (1990) and Sampson and Laub (1993). Specifically, Matsueda (1992:1601) finds that "males between the ages of 13 and 19 are fairly stable in delinquent behaviour" and that prior delinquency "has a very large total effect" on future delinquency.

With the introduction of Gottfredson and Hirschi's

self-control theory, we see a refinement of the debate along the lines of the stability of criminal propensities, the value of the different types of research and the complexity of crime and criminality. The immense import to this discussion is best described by Tittle (1988) when he suggests that policy issues are only justifiable when criminologists concentrate and succeed in finding "theories of human behaviour that provide empirically valid explanations of crime" (p.84).

According to Cohen and Vila (1995), a central concern in the debate is "the degree to which antisocial tendencies are stable and persistent throughout the life course" (p.126). This central issue is directly related to how the nature of crime and criminality is viewed by both camps. In addition, it follows that the nature of the types of research needed to provide appropriate data also comes into question. Self-control theory stresses cross-sectional designs while social control and life-course approaches stress longitudinal designs. These issues must be explored to fully understand the complexities of the debate.

The Stability of Criminal Propensities

The self-control theory proposed by Gottfredson and Hirschi (1990) rests on the stable characteristic of criminal propensity. That is, once self-control is established, it remains largely intact for the balance of the individual's life. In the absence of self-control, an

individual is at a greater risk of engaging in antisocial behaviours. Gottfredson and Hirschi are quick to point out that their theory is not "deterministic" but "probabilistic". That is, overall, general patterns of human behaviour will be predictable but individuals' circumstances remain varied. The position offered by Gottfredson and Hirschi (1990) is not only related to delinquent misconduct but includes accidents and other risk taking misconduct such as "household fires, auto crashes, and unwanted pregnancies" (p.92).

Previous research undertaken by Shavit and Rattner (1988:1468) supports the self-control theory by showing that "(1) the shape of the age distribution of delinquency is invariant across social groups and (2) it cannot be explained by age variations in schooling, employment and marital status". This would lend support to the theoretical position offered by Hirschi and Gottfredson (1993). However, according to Longshore, Turner, and Stein (1996:210), "critics have cited a lack of evidence for self-control as a stable trait of individuals ... and the theory is said to be tautological" (p.210). Hirschi and Gottfredson (1993:52) suggest that any tautology found in their theory can be found in all theories and the reason that they are "vulnerable to complaints about tautology is that we explicitly show the logical connections...whereas many theorists leave this to those interpreting or testing

their work".

However, using the Glueck data, Sampson and Laub (1993:219) show that there are some cases of deviants who appear to go through "abrupt changes" in their life-course. To illustrate their point they provide some of the qualitative data collected by the Gluecks as evidence of major life-course changes. They utilize the story of Fred Nullin² who stated that his "home responsibilities forced him to be a stable and regular worker" (p.219). This "abrupt change", like many of the others documented qualitatively, is said to refute the stable characteristic of criminality. Gottfredson and Hirschi (1990) would argue that delinquent and impulsive youths will choose deviant spouses, unstable jobs, and continue their delinquent ways in adulthood. In addition, the processes are probably decisive in the acquisition of self-control. The evidence of abrupt changes presented by Sampson and Laub (1993) would be argued against by Gottfredson and Hirschi on the basis that individuals must have had some "self-control" because without it, Fred Nullin might not care, or be able to care, about family members.

Patterson et al (1989:330) contend that it is not the "control theory" at play (i.e. failure of socialization) but rather that "family members directly train the child to perform antisocial behaviours". Studies show that "boys starting their criminal career in late childhood or early

adolescence are at the greatest risk of becoming chronic offenders" (p.330). On the other hand, Shover and Thompson (1992:90) contend that "aging improves offenders' ability and inclination to calculate more precisely and carefully the results of past and prospective criminal involvement and the result is an increased probability of desistence". However, their analysis must be critically viewed since the results do not indicate "a direct relationship between age and risk" (p.99). Moreover, the magnitude of their findings is quite low in that they seem to be explaining only about two to eight percent of the variance in the causal model³.

Nagin and Farrington discuss two findings in their work. They say "criminal involvement ... is quite stable over an extended period of time - age 10 - 31" and "there is a very substantial level of persistent unobserved heterogeneity" (1992a:253). They suggest that general theories such as Gottfredson and Hirschi's do not adequately consider the impact of persistent unobserved heterogeneity on coefficients and render the coefficients suspect. However, they correctly point out that "it seems unlikely that the high level of persistent heterogeneity in our results could be caused by a high level of stability in the social environment" (p.256). In addition, Moffitt (1993:674) argues that while incongruent, two facts exist in terms of antisocial behaviour: "(a) it shows impressive continuity over age, but (b) its prevalence changes

dramatically over time".

To address this incongruence, Nagin and Farrington assess whether the age of onset of criminal behaviour impacts on (a) subsequent persistence of such behaviour, (b) if the determinants of onset vary with age, and (c) if there are any differences between onset and continuation. The finding in the first case: the results "accord precisely ... with theories ... [proposed] by Gottfredson/Hirschi and Wilson/Herrnstein" (1992b:518). They explicitly state that their results "imply that criminal potential depends partly on personal factors and partly on parental ones" (p.519). Similarly, Caspi, Lynam, Moffit, and Silva's (1993) results generally support the stability theorem because norm violations at age 13 predict self-reported delinquency at age 15. In addition, they also conclude that there are "multiple routes" (1993:28) to delinquency which leads to the debate over the nature of crime and criminality.

Crime and Criminality

Laub and Lauritsen state that "based on the available evidence, our best guess is that universal patterns [of violent behaviour] do not exist" (1993:235) and that continued research is needed. However, Hirschi and Gottfredson state that in terms of the correlates of crime "major correlates of delinquency" include age, gender, race or ethnicity, intelligence, school performance and peer and family relations" and "any study not finding these

correlates are prima facie suspect" (1995:133). In terms of the life-course perspective, they suggest that "it is not a theory in the classical sense, but a post hoc descriptive scheme focused on discrete events or series of events that may or may not occur in the lives of individuals" (p.133).

However, Nagin and Paternoster (1991) support the premises presented by Sampson and Laub. They say that one of "the best documented empirical regularities in criminology is the positive association between past and future delinquency and criminality" (p.163). They also state that there are very few regularities with the exceptions; males are more likely to offend than females and arrest rates are higher for blacks than whites and finally "offending rates rise with age into young adulthood and decline thereafter" (p.163). In addition, Nagin and Paternoster suggest, in accordance with Sampson and Laub, that there is a direct role played by both "personal" and "social" capital which effects whether one engages in criminal behaviour. Moreover, they suggest that the "theories of Gottfredson and Hirschi and of Wilson and Herrnstein do not render irrelevant social control theory" (1994:600).

To further the debate, Caspi, Moffit, Silva, Stouhamer-Loeber, Krueger, and Schmutte (1994) examined the relationship between personality traits and crime "and other antisocial outcomes" (p. 164). Using multiple and

independent measures of personality and delinquency they found that "differences in personality are correlated consistently with delinquency." (p.185). In terms of the theoretical debate, they suggest that while control theory is supported, self-control (or impulsivity) is too simplistic psychologically and that the psychological explanation of crime is multi-faceted. Specifically they show that delinquency is related to "negative emotionality"⁴ and to "low constraint"⁵ (p. 187). However, low constraint certainly seems to be very much like impulsivity. Grasmick et al (1993) and Keane et al (1993) might argue that Moffitt's (1993) traits are representative of the same underlying construct: self-control.

Gottfredson and Hirschi (1990) offer their differentiation between crime and criminality by stating that while crimes are manifestations of low self-control, "criminality suggests that people differ in the extent to which they are compelled to crime" (p.88). Simply put, this distinction is based on actual behaviour versus the propensity to engage in that behaviour. It is this distinction that complicates the analysis of crime because the method of collecting data comes under scrutiny. That is, questions arise about whether these constructs can be measured at a single point in time or if they must be measured over time. This issue is also a major concern within the debate.

Research Approaches: Cross-Sectional versus Longitudinal

Sampson and Laub (1995:144) state that "social institutions and triggering life events that are hypothesized to modify trajectories include school, work, military induction, imprisonment and marriage". They state that "the major objective of the life-course perspective is to link social history and social structure to the unfolding of human lives" (p.145). In addition, they emphasize that it is "the quality or strength of social ties" (p.146), especially cohesive marriage or attachment to the labour force, not the timing of the events that must be examined. They conclude that the only way to obtain the appropriate data is to conduct longitudinal research.

In opposition, Hirschi and Gottfredson (1995:133) argue that longitudinal designs are not only very expensive but "the basic findings about crime and delinquency produced by cross-sectional and longitudinal designs are the same". Consequently, they argue that it is a waste of valuable resources to continue to direct public funds towards longitudinal research when more efficient methods can be utilized. However, the debate seems to be fuelled when the complexities of crime are examined.

For example, Thornberry et al (1994) examine the correlates of crime and suggest that "unidirectional models are inadequate" (p.194). In addition they assert that, interactional theory views the relationships among

delinquent peers, delinquent beliefs, and delinquent behaviour more comprehensively than do control, differential association, and integrated theories (p.55).

Thornberry et al (1994) contend that their research leads to the conclusion that behaviour, beliefs, and peers all have reciprocal relationships. Consequently, they support "the contention of researchers who have emphasized the need for longitudinal studies to understand more clearly the development of delinquency" (p.75). Similarly, McCord (1991) found that "conviction as a juvenile was related to being convicted as an adult" (p.411) and that it is the "mother's competence that influences the probability of their sons becoming juvenile delinquents" (p.412). She states that "repeated visits to the homes of 232 boys allowed analyses that included the dynamics of the family" (p.411).

Shavit and Rattner (1988) do not support the notion that longitudinal research is fruitless. In fact they suggest that their estimates of the relative contributions that each variable had on antisocial behaviour would have been biased had they not used longitudinal data. However, would their conclusions have been the same? Since Patterson et al (1989) point out that "there is a long history of empirical studies that have identified family variables as consistent covariates of antisocial behaviour and for later

delinquency" (p.329) and Zingraff, Leiter, Myers, and Johnson (1993) "add to an accumulating body of research on the risk of delinquency among maltreated children"⁶ (p.173) it is evident that there is a systematic pattern of correlates of antisocial behaviour. Since the longitudinal studies have repeatedly discovered the importance of family processes in the genesis of delinquency and since the findings from each approach converge on the key issues, then one must infer that in 1997, cross-sectional studies are the most efficient method of data collection and examination.

While Nagin and Land (1993) state that "the persistence of criminal (and conversely non-criminal) behaviour is well documented and accepted by all parties to the debate" the controversy "stems from fundamental disagreements about whether criminals are a *distinctive group* and *how to model criminal careers*" (p.329). However, these questions do not require one form of research design over the other.

Testing the General Theory in the 1990's

Self-control theory has generated more debate in criminology during the 1990's than any other theory. Where do things stand today? The debate is presented and directly confronted by research undertaken by Bartusch, Lynam, Moffit and Silva (1997) and Paternoster and Brame, (1997). Bartusch et al, (1997) find that there is more support for Moffitt's developmental model than for Gottfredson and Hirschi's (1990) self-control theory. That is, they seem to

find evidence to suggest that age plays an interactive role with other correlates of antisocial behaviour while Gottfredson and Hirschi suggest age is independent in its effect on antisocial behaviour. As a direct contrast to Gottfredson and Hirschi's (1990) position on the stability of criminal propensities, Bartusch et al (1997:42) suggest that the "theoretical focus on multiple pathways and causes across the life-course appears warranted". It is also an important piece of research because it highlights the need to collect data on children as early in their lives as possible.

Paternoster and Brame (1997) find that the data neither point to the developmental nor the control models. In fact, they conclude that the results more closely resemble the data of Sampson and Laub's research (i.e. the life-cycle/social control approach).

Greenberg's (1991) examination of the competing positions advanced by Blumstein, Cohen, and Farrington (1988a, 1988b) versus those advanced by Gottfredson and Hirschi (1990) seeks to uncover whether there are "discrete groups with different sorts of criminal careers" as suggested by Blumstein and colleges, or if Gottfredson and Hirschi are correct in pointing to the more unidimensional control theory. However, Barnett, Blumstein, Cohen, and Farrington (1992) suggest that Greenberg's mathematical model "provided no serious evidence that his equations could

predict" criminal behaviour (p.138). While it is widely accepted that there is a correlation between parental factors, deviant peers and participation in delinquent activities (Simons, Wi, Conger, and Lorenz 1994), it is the causal sequence that is widely disagreed upon. Simons et al (1994) found,

that youths who were rated as hostile and aggressive in the fourth grade (i.e., children who were at risk for becoming early starters) had a high arrest rate by age 13, whereas the arrest rate for adolescents who were not rated as hostile or aggressive in elementary school was virtually zero before age 14 or 15' (p.258).

There is overwhelming evidence to suggest that criminal propensities are stable. The unanswered question is about when this propensity begins and when it becomes stable. The resolution of this issue will only be put to rest if data are collected as early as possible in the lives of children.

These data however, will only be useful if the construct of antisocial behaviour is dealt with. Grasmick, Tittle, Bursik, and Arneklev (1993:6) suggests that "neither low self-control nor the existence of crime opportunity by themselves are the primary determinants of crime. Instead it is the combination of the two". In their effort to test Gottfredson and Hirschi's notion of self-control, Grasmick et al (1993) identify six components of self-control as suggested by Gottfredson and Hirschi (1990)⁸. Grasmick et

al (1993:17) conclude that "the six components we have identified as low self-control appear to coalesce into a single personality trait". Grasmick et al find that "it appears that regardless of the level of self-control, the opportunity to commit crime predicts criminal behaviour, at least to a modest degree" (p.24).

Hirschi and Gottfredson (1993:50) respond to Grasmick et al (1993) by stating that their "concept of self-control does not require that measures of crime and analogous acts be unidimensional". Hirschi and Gottfredson (1993:53) "see self-control as the barrier that stands between the actor and the obvious momentary benefits crime provides" and that "the link between self-control and crime is not deterministic, but probabilistic, affected by opportunities and other constraints".

From the other viewpoint, as with Sampson and Laub (1993), we agree that the sociogenic determinants are major contributors of conduct disorders and delinquency. Family functioning, social support, social bonds and other factors effect whether children are at risk of engaging in disorders directly and indirectly through psychogenic factors. According to the findings of Rankin and Kern (1994:511) "measures of parental attachments are modestly but consistently correlated with delinquency" and "single-parent homes may be moderately associated with delinquency".

According to this review of the evidence, Caspi et al

(1993:29), provide one of the most salient statements about criminological study:

adolescent social behaviour represents a joint articulation of an evolutionary past and a social present, and its analysis can only proceed with insights gleaned from multidisiplines.

Accordingly, this project will focus on early childhood data, collected in the first wave of what will be a longitudinal data set, and use multivariate and multidimensional analyses so as to shed some light on this very complex debate.

Reconciling the Controversy

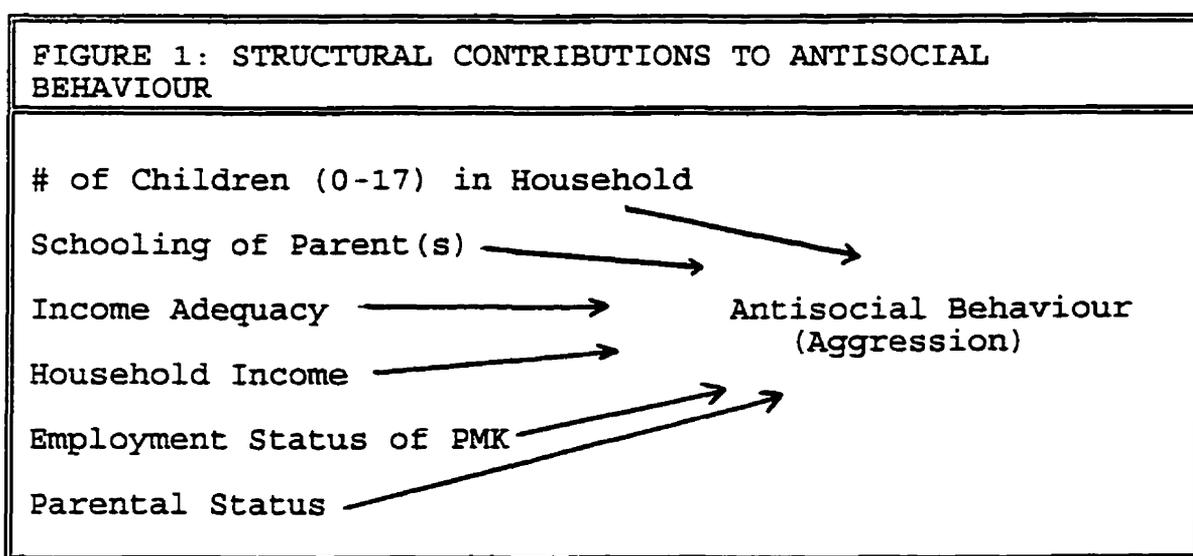
All of the different perspectives, individually, have implications for policy makers. In this thesis, I believe that an integrated model is a valuable avenue of research to pursue in light of the massive social implications that attach to crime control policies. Policy makers cannot make the appropriate decisions without adequate information and the acquisition of such information requires an open-minded approach to the various factors that contribute to crime including the individual level characteristics and the sociological dimensions that structure opportunities and prosocial bonds to the community.

The approach to reconciling some of these issues will be a systematic test of the major concerns in the debate. The first step will be to break down the contributions to

antisocial behaviour into three components: (1) structural, (2) individual, and (3) social control. Each of these models contribute theoretically to the onset of antisocial behaviour. Moreover, they shed light on the relative magnitude of each component in the explanation of delinquency.

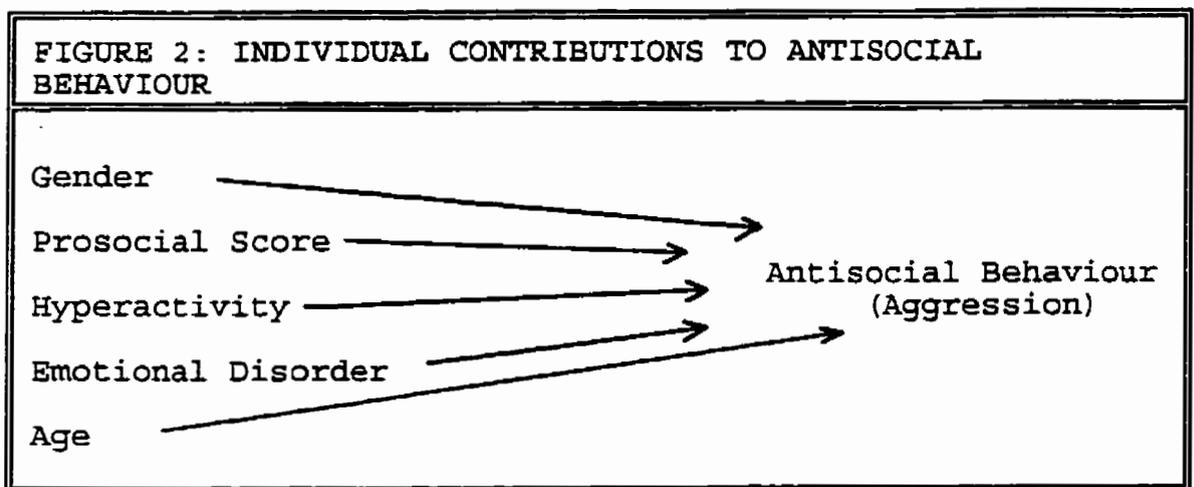
Modelling Structural Contributions

Figure 1 represents a model of the structural contributions of early childhood antisocial behaviour. Antisocial behaviour is measured by aggression and the factors affecting aggression including: the number of children age 0-17 in the household; the schooling level of the parents; the household income; the adequacy of the household income; the employment status of the person most knowledgeable about the child; and the parental structure of the household.



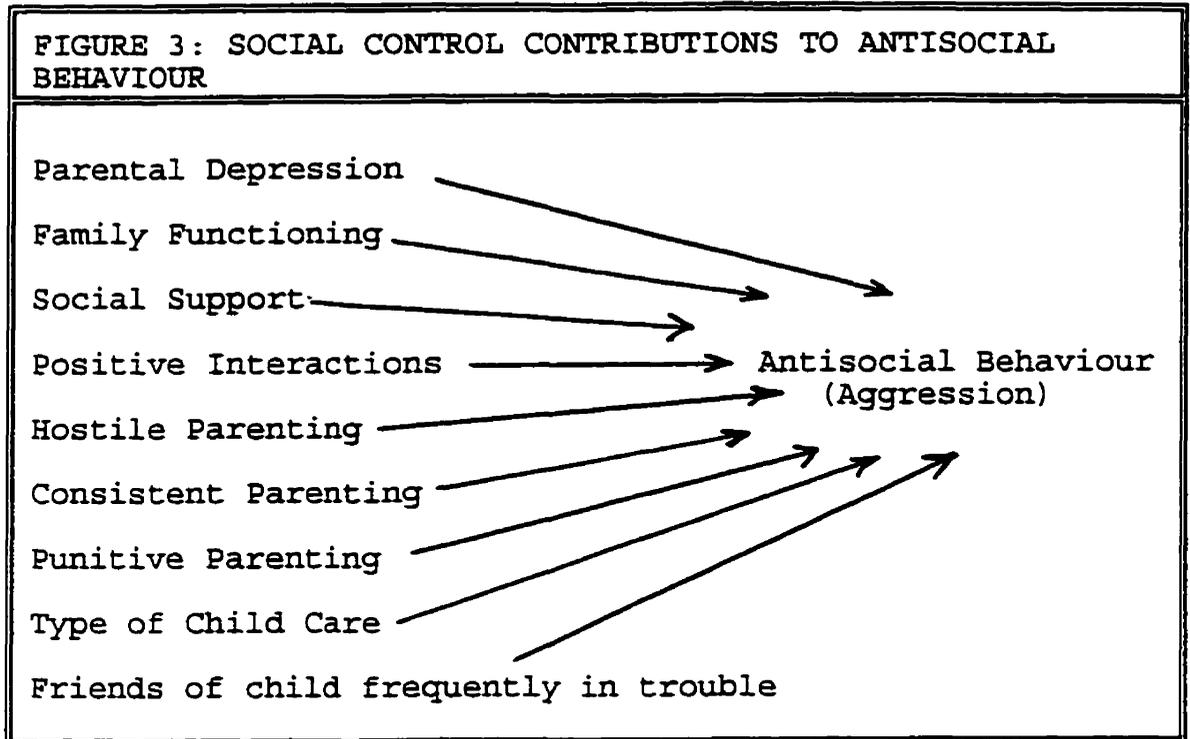
Modelling Individual Contributions

Figure 2 represents the individual contributions to early childhood antisocial behaviour. Once again aggression is used to measure antisocial behaviour while gender, prosocial characteristics, hyperactivity, emotional disorder, and age of the child represent the factors that affect the antisocial behaviours.



Modelling Social Control Contributions

Figure 3 represents the social control contributions to early childhood antisocial behaviour. Once again aggression is used to measure antisocial behaviour while parental depression, family functioning, social support, delinquent friends, positive interaction, hostile parenting, consistent parenting, punitive parenting, and if they associate with friends who get into trouble represent the factors that affect the antisocial behaviours.



This model is designed to measure the social controls that impact children and are elaborated on in the next chapter.

The structural approach reflects the contribution of Merton's strain theory. The individual approach is based on various developmental accounts, the social control approach is based on Hirschi's social bond approach and Sampson and Laub's informal social control over the life cycle. In the next chapter we show how we examine these models separately as well as in a full model that (1) combines the various levels of explanation and, (2) illustrates a potential interaction effect in a large national sample of Canadian children.

CHAPTER TWO: TESTING AN INTEGRATED THEORY OF CRIME

The National Longitudinal Survey of Children and Youth

The data utilized in this project comes from the National Longitudinal Survey of Children and Youth 1994-1995 (NLSCY). The NLSCY was undertaken by Statistics Canada to gather information on the well-being, health, and life opportunities of Canadian children (NLSCY Manual, 1997). The objectives of the NLSCY are to collect biological, social and economic characteristics and risk factors of children and youth; monitor these children over time and ultimately provide useful information to policy and program officials to help better the lives of all Canadian children (NLSCY Manual, 1997). The first cycle of data was released in November 1996 and was made available at the University of Calgary in the winter of 1997. It will be followed up with biannual surveys on the cohort sample until they reach adulthood. The goal of the NLSCY is to "enhance the capacity of the various partners in society to develop effective strategies, policies and programs to help children succeed in our changing society" (NLSCY Manual, 1997:3).

The NLSCY target population is all Canadian children from newborns to those age 11. The sampling frame was done by utilizing Canadian household information. The main component of the research sample was stratified by households that currently report having at least one child, between the ages of 0 and 11, in the home⁹. The

information, gathered from StatsCan's Labour Force Survey (LFS), allowed for the selection of approximately 12,900 households from the ten Canadian provinces. Once the sample of households was selected, individual children were selected. One child age 0 to 11 was selected, at random, and then, subsequent children of the same economic family were selected at random up to a maximum of four children. The final number of children chosen to be in the project was 22,831.

The NLSCY was stratified and sampled based on two requirements: provincial estimation capability and key age estimation ability. First, the provinces were sampled so that there were sufficient sample sizes to make comparisons across provinces. Second, the age component ensures available estimates for the age categories 0 to 11 months, 1, 2 to 3, 4 to 5, 6 to 7, 8 to 9, and 10 to 11. This selection method is important for surveying every two years in subsequent cycles of the NLSCY.

The data were collected from each household by establishing a person most knowledgeable (PMK) about each child. The PMK was asked information from three questionnaires: the General questionnaire, the Parent questionnaire and the Child questionnaire. Variables from all three of these questionnaires are utilized in this study.

In an effort to ensure that the data collected can be

used to describe Canadian children, StatsCan provides a weighting measure. This variable corrects for sampling problems that are encountered during the collection process. For example, between the time of selection and the collection of the NLSCY, some of the selected households had become vacant. This is a methodological problem that must be accounted for if the data are to be used to generalize to the population. Consequently, since we are interested in being able to generalize to Canadian children, we employ the use of the weighting scheme offered by StatsCan. However, the weights provided by StatsCan produce an unbiased estimate of the population that has a tendency to distort the standard errors in regression analysis. To overcome this problem, we recalculate the weight so that the number of cases is brought back close to sample sizes. In this study there are 31 sub-populations analyzed, and the weights are calculated by dividing each sub-population weight by the mean of the weighted variable for the particular sub-population. This recalculation provides the basis for generalizing the results to all Canadian children.

Cross-sectional and Longitudinal Designs

While the NLSCY is designed as a long term study of Canadian children, the project is in its first cycle. That is, the data available are, for the moment, cross-sectional. This is not problematic for the purposes of this study but offers fantastic research opportunities in the future. As

previously discussed, the debate about the value of longitudinal versus cross-sectional research is a core concern for criminologists. However, since this project is designed to examine the genesis of conduct disorders, the conclusions drawn are assumed to be in line with previous research. For example, when Hirschi and Gottfredson (1995) argue that cross-sectional research and longitudinal research designs "are the same" in terms of the conclusions and others suggest that both longitudinal and cross-sectional research "point to a common conclusion" (LeBlanc, 1983), we are satisfied that the cross-sectional data from the NLSCY will suffice.

Concepts and Definitions

From these data, psychogenic and sociogenic determinants of behaviour are extracted for examination. These concepts are modeled as shown in figures 1 through 3 in chapter one. The psycho-genic determinants are those classified as being internal characteristics of the individual. The sociogenic determinants are classified as those external to the individual. The dependent variables used in this study, aggression and property offenses, represent early adolescent conduct disorders. Both variables are measures of multiple indicators from a behavioral scale created by StatsCan¹⁰.

Dependent Measures: Conduct Disorders

The primary goal of this study is to resolve some of

the debate in the literature about the causes of deviance. Since the children are actually below the threshold of criminal liability through the Young Offenders Act, we refer to these behaviours as conduct disorders. The NLSCY provide data on two factors, aggression and property offenses that are classified in this study as conduct disorders. These measures are consistent with the works previously undertaken by the Gluecks (1950), Gottfredson and Hirschi (1990) and Sampson and Laub (1993).

Aggression (abecs09): Physical aggression is a scored measure, factor analyzed by StatsCan (Cronbach's alpha 0.770), consisting of six items from the behaviour scale. It includes: how often the child gets into fights; reacts with anger and fighting; physically attacks people; threatens people; is cruel; bullies or is mean to others; and kicks, bites or hits other children. These factors are identified by StatsCan as physical aggression. They are the central dependent variable, conduct disorder, in this study. For analysis, this variable was dummy coded (0 through 1 = 0, 2 through 12 = 1) to reflect an even distribution between aggressiveness and non-aggressiveness so that the assumptions underlying regression were not violated. That is, the variable has a poisson distribution where most of the children score either zero or one on the scale. This type of distribution violates OLS regression assumptions because the errors also take on a poisson distribution.

Property Offenses (abecs11): Property offenses is a scored measure, again factor analyzed by StatsCan (Cronbach's alpha = .637), consisting of six items from the behaviour scale. It includes: the destruction of their own things; stealing at home; destroys other peoples' things; tells lies or cheats; vandalizing; and stealing outside the home. These factors are identified as a single construct, property offenses and represent the alternative form of conduct disorders used as a comparison to aggression. Once again, the variable had to be recoded to meet the criteria for regression (0 = 0, 1 through 12 = 1).

Independent Measures

The NLSCY gathered a wide variety of information about the children in this study. Included in the project, they gathered: demographic; socio-demographic; education; income; and labour force data. These data are considered for the purposes of this study as structural components. Also, the survey gathered behavioural data that are considered for the purposes of this study as individual components. Finally, child care, depression, parenting styles, family functioning and social support data collected by the NLSCY are utilized as measures of social control components in this study. These components represent a conception of the determinants of conduct disorders in early adolescents as outlined in the previous chapter. While this may not be an exhaustive listing¹¹, the major components contributing to conduct

disorders are addressed.

Structural Components

The structural component of this analysis encompasses those elements that are external to the individual. That is, those things that presuppose the individual are examined. Specifically, in this study, the number of children that live in the same household, the education level of parents, the household income, the adequacy of that income, the employment status of the PMK and whether or not there are two natural parents in the household are representative of structural contributions to behaviour. Obviously, these are not all of the possible structural contributors but (1) they are theoretically derived from previous research in the area and (2) like most research, there are limitations of examination based on the available information. Other structural variables that may be very important contributors to conduct disorder such as race, residential mobility, religious affiliation/religiosity, or parental deviance are not available from this survey. StatsCan has either failed to obtain these data or they have suppressed the information for confidentiality purposes. However, we believe that the structural variables in this study provide a reasonable picture of the central factors of influence on children based on past research by Merton (1968), Agnew (1992) and Sampson and Laub (1993). That is, familial structure is said to be the central socializing

effect on children and the variables in this model attempt to capture the structure of the families for examination. *Number of Children (0-17) in Household (admhd07)*: The number of children age 0 through 17 in the household is measured from one child to four children. Values greater than four children were set to four.

Schooling of Parent(s) (aedpd02 and aedsd02): The highest level of schooling obtained for both the PMK and the spouse or partner was recorded. Both variables have the same values: less than secondary, secondary school graduation, beyond high school, and college or university degree (including trade). Male PMK's with no spouse were excluded from this variable and the value set to "not stated".

Income Adequacy (ainhd07): The adequacy of the household income was recorded on a scale from lowest to lower middle to middle to upper middle to highest. The categories are constructed using the same methods as the General Social Survey (GSS) and the National Population Health Survey (NPHS)¹².

Household Income (ainhd01a): This recoded variable captures household income in the categories: less than 10,000, 10,000 to 14,999, 15,000 to 19,999, 20,000 to 29,999, 30,000 to 39,999, and 40,000 or more. For all of the respondents, 55 percent have 40,000 or more household income¹³. Consequently, for this study, the variable was dummy coded as under \$40,000 = 0 and over \$40,000 = 1.

Employment Status of PMK (alfpd25): The current working status of the person most knowledgeable about the child is measured and dummy coded as currently working = 1, and other = 0. Fifty-seven percent of the respondents report that they are currently working.

Parental Status (admcd03): This measures who the child currently lives with. This variable is dummy coded as living with both biological parents =1 and all other living arrangements = 0.

Individual Components

The variables included in this section are internal characteristics of the children. While it has been suggested that these characteristics are biological (i.e. age and gender), this study does not address the biological component of these contributors as such. We include gender, prosocial behaviour, hyperactivity, emotional disorder, and age. These contributions are primarily driven by the work of Gottfredson and Hirschi (1990) and Wilson and Herrnstein (1985).

Gender (ammcq02): This measures the child's sex and is dummy coded as male =1 and female =0.

Prosocial Score (abecs07): Prosocial behaviour is a scored measure, factor analyzed by StatsCan (Cronbach's alpha = .816), consisting of ten items from the behaviour scale. The indicators of prosocial behaviour include: showing sympathy for someone who has made a mistake; helping someone

who has been hurt; voluntarily helping to clean up a mess someone else has made; will try to stop quarrels or disputes; will help others who are having difficulty with a task; comforts a child who is crying or upset; spontaneously helps to pick up after other children; invites bystanders to join in a game; helps other children who are feeling sick; and praises the work of less able children. While the variable "prosocial" implies that it would be the antithesis to antisocial behaviour, it seems that it measures what Herrnstein and Murray (1994) refer to as "civility" or it could represent civic mindedness. The naming of the variable is an important point for validity purposes, however, as previously mentioned, much of this study is constrained by the investigators of the NLSCY.

Hyperactivity (abecs06): Hyperactivity is also a scored measure, factor analyzed by StatsCan (Cronbach's alpha = .838), consisting of ten items from the behaviour scale. The items that construct hyperactivity are: can't sit still, is restless or hyperactive; is distractible, has trouble sticking to any activity; fidgets; can't concentrate, can't pay attention for long; is impulsive, acts without thinking; has difficulty awaiting turn in games or groups; cannot settle to anything for more than a few moments; and is inattentive. This variable represents the prime component in the work of Gottfredson and Hirschi (1990). They suggest that we need not look much farther than this construct to

discover the cause of conduct disorder (and of criminal behaviour). Hyperactivity is recoded (0=1, 1=2, 2 through 3 = 3, 4 through 6 = 4, 7 through 9 = 5, and 10 through 16 = 6) to reflect a more normalized distribution.

Emotional Disorder (abecs08): Emotional disorder - anxiety is a scored measure, factor analyzed by StatsCan (Cronbach's alpha = .794), consisting of eight items from the behaviour scale. The items for emotional disorders include: seems to be unhappy, sad or depressed; is not as happy as other children; is fearful or anxious; is worried; cries a lot; appears miserable, unhappy, tearful, or distressed; is nervous, high strung, or tense; has trouble enjoying him/her self. Based on the literature, it is not clear how emotional disorders would relate causally since it is not clear whether or not this trait is biologically based (i.e. chemical imbalances) or if it is socially created. However, it is clear that emotional disorders at early stages in life are extremely important. The distribution of emotional disorder not surprisingly is poisson and therefore was recoded to reflect a more normal distribution (0=1, 1 through 2=2, 3 through 4=3, 5 through 7=4, 8 through 16=5).

Age (ammcq01): This measures the category of biological age of the child in years. However, detailed ages (years and months) are not able to be calculated because the collection date has been suppressed by the NLSCY investigators.

Social Control Variables

Social Controls, for children, primarily involve familial forms of control. The NLSCY gathered data on parental depression, family functioning, social support, positive interactions, hostile parenting, punitive (aversive) parenting, consistent parenting, and the type of child care use by the family. The interactions of the child and family act as informal social controls that are supported by the research of Hirschi's notion of the social bond (1969), and Sampson and Laub (1993).

Parental Depression (adpps01): This scaled score (Cronbach's alpha = .82) is a shorter version of the CED-D scale developed at the Epidemiology Study Centre of the National Institute of Mental Health in the United States. The CED-D scale was shortened from 20 question to twelve for the NLSCY. Cronbach's alpha for this scale is .82. These items focus on the depression of the PMK, with only a 2.2 percent non-response rate. The depression variable has a positive skew in the distribution such that a recode was necessary for analysis (0=1, 1 through 2=2, 3 through 4=3, 5 through 7=4, 8 through 17=5, and 18 through 35=6).

Family Functioning (afnhs01): This scaled score (Cronbach's alpha = .88) developed by researchers at Chedoke-McMaster Hospital of McMaster University is used to measure family functioning such as: problem solving; communications; roles; affective involvement; affective responsiveness and

behaviour control. In all there are twelve items in this scale and the non-response rate was 1.9 percent overall. Once again, a positive skew in the distribution dictated that the values be recoded (0=1, 1 through 2=1, 3 through 5=3, 6 through 8=4, 9 through 10=5, 11=6, 12=7, 13 through 15=8, and 16 through 35=9).

Social Support (asphs01): This scaled score (Cronbach's alpha = .82) is a shorter version of the Social Provisions Scale developed at Iowa State University and is used to measure perceived support. The six items are designed to capture: guidance, reliable alliances, and attachments. There is a reported non-response rate of 1.4 percent. The scale seems to be a bimodal distribution because scores 12 and 18 are the most common scores. However, it is an artifact of the consistency of reporting either 2 ("agree" to positive items, "disagree" to negative items) or 3 ("strongly agree" to positive items, or "strongly disagree" to negative items) for the response categories. Accordingly, the values were recoded to reflect a more normal distribution (1 through 11=1, 12=2, 13 through 15=3, 16 through 17=4, and 18=5).

Positive Interactions (aprcs03): Five items from the parenting scale make up this factor analyzed scaled score (Cronbach's alpha = .808). The items include: amount of praise; talking or playing time; laughing together; doing special things together; and time playing sports hobbies or

games. The non-response rate ranged between 2.1 and 2.7 percent.

Hostile Parenting (aprcs04): Seven items from the parenting scale make up this factor analyzed scaled score (Cronbach's alpha = .706). The items that were factored out to represent hostile/ineffective parenting include: how often they get annoyed with the child for doing something they should not be doing or saying; proportion of praise when talking about child; proportion of disapproval when talking about child; how often they get angry when they punish the child; whether punishment depends on their mood; how often they have trouble managing the child in general; and repeated discipline for same behaviours. The non-response rate was reported to be between 2.1 and 2.7 percent. This variable was positively skewed such that a recode was required to obtain a more normal distribution (0 through 1=1, 2 through 4=2, 5 through 6=3, 7 through 9=4, 10 through 12=5, 13 through 15=6, and 16 through 25=7).

Consistent Parenting (aprcs05): Five items from the parenting scale make up this factor analyzed score (Cronbach's alpha = .660). It includes: making sure the children do what they are told; letting the children get away with things they should have been punished for; following through with punishment; the ability of the child to get out of punishment; and how often the children are allowed to ignore their punishment. The distribution was

relatively normal and there was no reason to alter this variable.

Punitive Parenting (aprcs06): Seven items in the parental management scale make up this variable (Cronbach's alpha = .569). While only 2.5 percent of the respondents provided no answer, the factor analysis alpha level is quite low and further investigation of this construct might prove to be worthwhile. Moreover, caution must be taken when drawing conclusions about the results. The distribution is deemed to be reasonable for analysis and therefore no recodes were required.

Type of Child Care (acrcqla): This variable measured the child care provided to the child. It is dummy coded as using child care such as a daycare or babysitting (yes) = 1 and (no) = 0. Only 393 respondents either refused or did not provide an answer to this question.

Friends of child frequently in trouble (arlcq05): The PMK was asked how often the child would hang around with other kids they think are frequently in trouble. This question is asked of only those children age 10 and 11. Because the distribution of this variable is poisson, it was recoded as a dummy variable such that never hanging around with friends in trouble = 1 and any other response = 0.

Multiple Regression: Three Phase Methodology

These data will be examined using Maximum Likelihood Logistic Regression estimation models¹⁴. The objective of

the analysis is to determine the strongest predictors of conduct disorders for the structural, individual, and social control components. Subsequently, we propose to construct a multivariate model based on the strongest constituent elements from each of these approaches to test stability, specialization, and age effects. Further, the goal through exploratory methods is to produce a final trimmed model that specifies the separate contribution of each factor.

Logistic regression is the most prudent method of analysis because the assumptions under which Ordinary Least Squares (OLS) regression produces unbiased estimators are violated. That is, some of the variables in this analysis do not meet the criteria prescribed by the OLS assumptions. For example, some variables are not normally distributed (i.e. aggression and property offenses). Consequently, these variables have been recoded as dummy variables so as to provide the means to interpret them substantively through the use of logistic regression techniques.

Since these data have never been analyzed along these lines, the thesis breaks new ground. It provides a template for further analysis on the subsequent panels of data and establishes the importance of interdisciplinary examination of behaviour.

Phase One: Assessing Validity

In this phase, several tasks are accomplished: first, external validity can be checked against previous research

that has consistently found similar contributors to conduct disorders (i.e. gender effects, maltreatment effects, etc.). Finding these same contributors, then we lend support to the data as valid. It should be noted once again that according to Hirschi and Gottfredson (1993), without these findings the data are "prima facie suspect".

Second, internal validity can be checked by examining multiple measures of conduct disorders. Both aggression and property offenses will be regressed on the structural, individual, social control components. Similar findings with respect to both of these conduct disorders will lend support to the internal validity of our data. Any time that multiple indicators provide consistent results, it is a method of triangulating the results so that we may be more confident in the final analysis.

Third, finding these models to be similar, and that we can establish the factors effecting conduct disorders are the same, we are lending support to the argument that given certain probabilistic conditions, individuals are at a greater risk of all types of conduct disorders. This has massive implications for the previous research conducted that suggests criminals specialize in their behaviour and in essence become "career criminals".

Phase Two: Assessing Stability across Age and Gender

In this phase, we use a trimmed model and examine the effects across each age category. If we find that the

effects are similar across the age range, then we shall lend support to Gottfredson and Hirschi's claim that propensities to engage in criminal behaviour are stable. However, since this examination uses cross-sectional data, the populations are different across the age categories and make direct comparisons methodologically improper. Therefore this examination qualifies first that these effects are potentially circumstantial in nature. However, it would be remiss to dismiss any systematic patterns that are observable in the data. In addition, due to the large sample sizes and statistical properties used, we can assess with some confidence whether the contributions operate in a similar way or not. Moreover, consistent results across age categories will illuminate further research opportunities with the data in longitudinal form. If however, the results are inconsistent, it will imply that further research will be required to assess the age effect as specified by those opposed to the findings of Gottfredson and Hirschi.

Phase Three: Exploring Interactions in Causes of Conduct Disorders

In the final phase, we will explore interactive relationships in conduct disorders. According to much of the theoretical debate, it seems that the family processes are combined with the behaviour of the children themselves, and that a major consideration should be whether or not these forces are acting in conjunction with each other, thus

confounding the causes of conduct disorders. Moreover, a better understanding of the interactive processes is crucial in understanding the genesis of conduct disorders and these interactions are borrowed from ostensibly conflicting perspectives. Further, it may be possible to assess the value of the psychogenic versus the sociogenic models and determine whether we require a multi-disciplinary perspective rather than the parsimonious approach that Gottfredson and Hirschi propose.

CHAPTER THREE: THE GENESIS OF CONDUCT DISORDERS

Some initial comments should be noted prior to this analysis. Because logistic regression techniques are utilized, the regression coefficients are difficult to interpret. That is, because logistic regression coefficients are interpreted as a one unit change in the independent variable that results in a subsequent (b-coefficient) unit change in the log-odds of the dependent variable, the focus must shift from these non-meaningful coefficients to ones that are more meaningful. Fortunately, logistic regression provides an exponential coefficient that is not only interpretable, but is easily understood. Interpretation of these coefficients is quite straightforward: coefficients greater than one represent a positive multiplicative effect; coefficients less than one represent a negative effect. The interpretation of these exponential coefficients is an effect whereby the presence (or absence) of, or increases in the independent variable has a multiplicative increase or decrease in the probability of the dependent variable. Moreover, the dependent variable is a binary variable that is interpreted as either existent or not existent. Throughout this analysis then, the multiplicative effect is the logical focus. By way of illustration, a positive exponential coefficient of 1.5 means that one unit change in the independent variable increases the likelihood of the dependent variable by 1.5

times. On the other hand a coefficient of .5 means that a unit change in the independent variable decreases the likelihood of the dependent variable by half.

Similarly, logistic regression does not provide an explained variance fit statistic. In this analysis however, a pseudo explained variance fit statistic is calculated for the different models, but it is duly noted that interpretation must be undertaken with caution. Fortunately, the Bayesian Information Criterion (BIC) statistic provides a test statistic for comparing models (See Raftery, 1995). This is critical in this analysis because of the need to resolve some of the debate in the literature. Generally however, the BIC is simply utilized in this study as a test of the significance of the fit for each model. The form of the BIC utilized in logistic regression is as follows:

$$BIC_k = L^2_k - df_k \log n$$

where L^2_k is the deviance of the model, df_k is the corresponding degrees of freedom and n is the number of cases in the model.

Finally, the values chosen to reflect whether or not a model is significant are relatively stringent ($p < .0001$ and $p < .001$). This is a result of the criteria set out by Raftery (1995:111) because "P-values and the tests based upon them give unsatisfactory results, especially in large samples sizes". Raftery (1995:141) contends that the BIC

offers a more efficient method of significance, but shows that a "strong" P-value in samples that are greater than 10,000 must be greater than .0001.

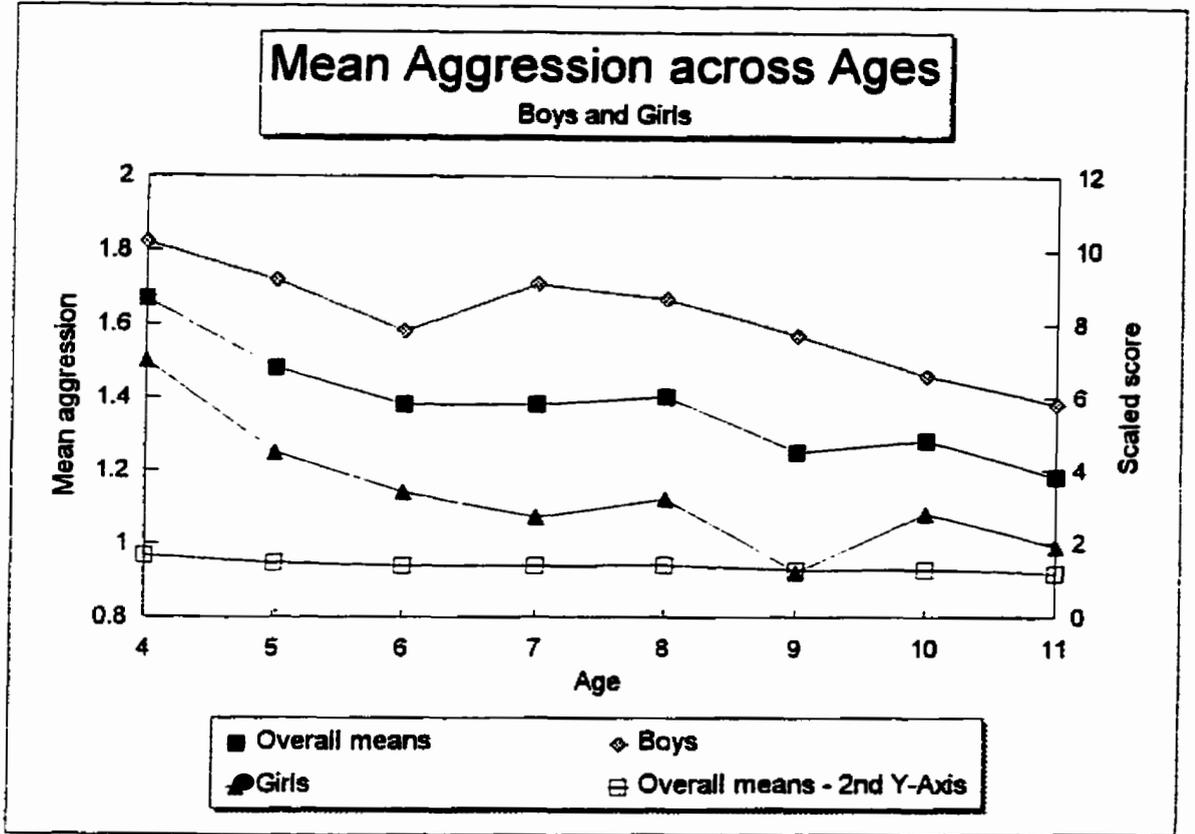
PHASE I:

Validation of Previous Research: Common Correlates

In this phase, the validity of the study is analyzed so that the level of confidence in the results increases. First, we ensure that the results are consistent with previous research. This provides a reasonable assurance of external validity. Second, an additional measure of conduct disorder, property offenses, is introduced and analyzed. The results are compared with that of aggression so as to illustrate internal validity. With validity assessed, we then move to discuss the implications of these findings in terms of the similar effects causing multiple kinds of conduct disorders.

If we examine the trends associated with the mean scores of the different age groups, we can see systematic patterns separately for boys and girls. In Figure 4, we can observe that the mean aggression scores across the age categories declines with age. This is a statistically significant ($t=9.6$) decline since we see that at age four the mean score is 1.67 whereas at age 11, the mean score is only 1.18. This is a 29 percent decline in the mean aggression score from age four to age eleven.

Figure 4



However, we also note that at every age, the male scores are greater than the female scores. This is highly consistent with all previous research.

Tables 2 and 3 present the multiplicative logistic regression coefficients of aggression and property offenses. These include the structural contributions, the individual contributions, and the social control components for the ten and eleven year old children in the Canadian NLSCY. These components are theoretically derived and believed to

contribute to early adolescent conduct disorders. Each component for each table is individually examined, then a full model is tested, and finally, a trimmed model is proposed and tested.

Model 1 represents the structural contributors to conduct disorder, Model 2 represents the individual contributors, Model 3 represents the social control contributors, Model 4 represents the full model, and Model 5 represents the trimmed model. The tables include the -2LogLikelihood , the Chi-square model improvement, the significance level, the "pseudo" explained variance statistic (R^2), the BIC statistic, and the total number of cases in the sample. With these data, we will show the important effects contributing to conduct disorders in early adolescence.

Contributors of Aggressive Behaviour

The results from Table 2 set the stage for the rest of the analysis. From our analysis of the structural, individual, and social control models, we have a basis for comparing these results against full models, trimmed models, across age categories, and across gender categories based on the strong theoretical foundation, spelled out in chapter one. This analysis is not designed as a direct test of one particular theory, but as a photographic replication of the overarching contributions usually undertaken from more narrow theoretical foundations. The design permits us to

examine the individual contributions of each perspective as well as the combined contributions of a full model.

Structural Contributions

Model 1 shown in Table 2 represents the effects of the structural contributions as outlined in Figure 1. It appears that schooling of the parent, the schooling of the spouse, household income, the adequacy of the household income and the working status of the PMK have no significant direct effect on aggression in children. These tests indicate that, controlling for all other variables in this model, the effects of these structural conditions are not different than obtaining a multiplicative effect of one. This means that from these data, it can be concluded that these structural conditions do not contribute to conduct disorders in these children.

On the other hand, both the number of children 0-17 in the same household and having both biological parents do have a direct effect on aggression in these children. These two structural conditions have significant effects that must not be disregarded in the analysis. Interpretation of these effects will come in the fifth model where a trimmed version of the significant contributions are proposed.

While these variables are significant, we must point out that the model does not seem to explain a great deal. The fit statistics suggest that about 2 percent of the -

2loglikelihood (deviance) in the model is being explained. Moreover, the BIC statistic in this model is the lowest of all other models examined. These results suggest that strain models of delinquency have little explanatory power.

Individual Contributions

Model 2 in Table 2 represents the individual contributions to aggressive behaviour. In this model

TABLE 2: LOGISTIC REGRESSION EXPONENTIAL COEFFICIENTS (CHILDREN AGE 10 AND 11) OF AGGRESSION ON STRUCTURAL, INDIVIDUAL, SOCIAL CONTROL, FULL, AND TRIMMED MODELS.					
	(1)	(2)	(3)	(4)	(5)
<i>Structural</i>					
Children in Household	1.31**			1.42**	1.38**
Schooling of Parent	1.00			1.07	
Schooling of Spouse	.951			.892	
Household Income	.780			.841	
Income Adequacy	.978			1.09	
Biological Parents Currently Working	.695**			.964	.751
	.931			.835	
<i>Individual</i>		1.51**		1.37**	1.38**
Hyperactivity		1.43**		1.35**	1.31**
Emotional Disorder		.899**		.935**	.921**
Prosocial Behaviour		1.06		1.04	
Age		1.22		1.23	
Gender					
<i>Social Control</i>			1.07	.946	
Parental Depression			1.09**	1.08	1.05
Family Functioning			1.08	1.12	
Social Support			.992	1.04	
Positive Interaction			1.56**	1.36**	1.36**
Hostile Parenting			.976	.980	
Consistent Parenting			1.06	1.03	
Punitive Parenting			.753	.773	
Child Care			.533**	.693**	.652**
Friends in Trouble					
-2 LogLikelihood	3904.75	3987.64	3918.7	3674.1	3912.0
Chi ² (improvement)	93.358	611.46	515.67	747.06	774.65
Significance	.0000	.0000	.0000	.0000	.0000
BIC	-68.80	-593.88	-484.1	-673.9	-746.6
Pseudo R ²	.024	.153	.132	.203	.198
Number of Cases	3221	3282	3229	3057	3217

Notes: See Appendix 1 for variable information.

** p < .0001

* p < .001

neither age, nor gender is significantly related to aggressive behaviour in these children. In terms of age, this is not a surprising finding since it is only the ten and eleven year olds being examined (i.e. there is too little variance to capture differences associated with maturation). Gender, also not significant, is actually not surprising as we shall see in Phase Two of the study because the other major predictors in the model account for the gender differences. However, the remaining variables in this model behave as predicted in line with the theoretical position of Gottfredson and Hirschi (1990). That is, the psychological makeup of the child with hyperactivity, emotional disorders and prosocial behaviours contribute very significantly to aggressive behaviour. Prosocial behaviour has a small negative multiplicative effect of .899. That is, those children who score high on the prosocial scale are approximately 10 percent less likely to be aggressive. Hyperactivity and emotional disorders have much stronger effects. As the score on hyperactivity or emotional disorder scales increase by one unit, children are 1.51 and 1.43 times more likely to be aggressive, respectively. As we will show, these predictors are consistently very strong predictors of conduct disorders.

Without question, this is the model that, by itself, explains most of the variance in conduct disorders. The BIC and fit statistics suggest that if we were to chose only one

of the three components, the individual contributions would have to be our choice. As we will see, this finding is consistent throughout the analysis.

Social Control Contributions

Model 3 of Table 2 shows that parental depression, social support, positive interactions, consistent parenting, punitive parenting and child care do not have a significant direct effect on aggression. It is not surprising that consistent and punitive parenting do not show up as significant because of the low alpha level obtained in the factor analysis phase. Social support and positive interaction however, are surprising in light of Sampson and Laub's emphasis on these kinds of family processes. On the other hand, family functioning, hostile parenting, and having no friends in trouble are significantly related to aggressive behaviour when all other social control variables are controlled. It is important to note that hostile parenting and having friends in trouble have the greatest multiplicative effect on aggressive behaviour. Increases in Hostile parenting scores increases the likelihood of being aggressive by 1.56 times. Having no friends in trouble decreases the likelihood of aggressiveness by 46.7 percent and seems to be the most significant predictor in this model.

As we show later, these two variables seem to represent the bulk of the variance in the model which is slightly

lower than the individual contributions. That is, the pseudo R^2 for the social control model is .132 versus .153 for the individual model.

Full Model

Model 4 in Table 2 represents the structural, individual, and social control models combined into a full model. All of the variables that were previously significant remain with the exceptions of having both biological parents, and family functioning. While it is prudent to view these results as being statistically important, it is equally important to uncover their substantive meaning. The immediate conclusion could be that these variables were only marginally significant in their respective main models and once combined, lost statistical importance due in part to the extent to which the variance they explained was shared by other variables in the full model. However, it must also be noted that, as discussed previously, there may be problems in the measurement of some of these constructs.

Trimmed Model

In an effort to simplify the analysis, Model 5 is proposed as a trimmed version of the full model. All variables that were significant in their initial models are retained and tested against the full model. Variables that did not show up as being significant in both initial and full models are eliminated and deemed to have no effect upon

aggressiveness in the children examined in the NLSCY. However, a caution must be noted here that stipulates these variables remain as possible avenues for future research. As was discussed in chapter 2, some variables may be artificially insignificant based on measurement errors and more efficient measurement techniques could provide insight into aggressiveness that is not being found in this analysis.

With the trimmed model then, we can see that the elimination of the non-significant variables decreases the BIC statistic by 72.7 points. According to Raftery (1995), any negative difference greater than 10 provides very strong evidence that the model with the more negative statistic is the better fitting model. Consequently, we are confident that the trimmed model is the more appropriate model to examine. Not surprisingly, the results from the trimmed model are virtually identical to those found in the full model.

External Validity

How do we interpret the results? It is clear that as the number of children increase in the household, aggressive behaviour rises. This has been theoretically developed along two lines: first that there would be less time available for the parents to govern the child's behaviour, and second that the opportunity for aggression increases with more siblings. Of these two arguments, the more

plausible seems to be that it is opportunity which is increasing aggression, consistent with control theory. This conclusion is based on the fact that in this model, we are controlling for the parental situation of the children. While having both biological parents itself is not significant, we know that whether or not both parents are involved, the number of children in the same home plays an important role in aggressiveness. Is this a causal type situation? While it could be argued that opportunity is possibly causal, it seems more reasonable that siblings are an outlet of what Gottfredson and Hirschi would describe as an innate propensity to engage in the behaviour. One other point must be carefully considered: because we are relying on information from the PMK, the number of children in the home could be a measurement artifact since the PMK has intimate knowledge about the other children in the home. In fact, the PMK may not be in a position to observe aggressive behaviour as effectively outside these intimate relationships.

Having no friends in trouble is also not surprising considering the arguments offered by Sutherland's theory of differential association. However, we must address whether this is a causal influence given Gottfredson and Hirschi's counter-argument that the propensity to engage in these behaviours is instilled *a priori* of developing relationships outside the home environment. Unfortunately, this dilemma

is not resolvable within the confines of this evidence because the data for friends in trouble was only gathered for the 10 and 11 year old children. However, as we will demonstrate in phase II of the analysis, predictive models show consistency across age categories suggesting that in fact, the propensities may be operating at a much earlier age than having friends in trouble.

Emotional disorders having a direct effect on aggressive behaviour is not surprising given the items that make up this variable. It would be very surprising to find happy and non-depressed children fighting or attacking others. Once again, causation is of great concern and emotional disorders seem to be justified as being a causal element of aggressive behaviour. However, from a sociological viewpoint, there are problems discovering the genesis of emotional disorders. According to Smith and Thornberry (1995), there is a direct relationship between child maltreatment and emotional disorders that leads to conduct disorders. However, others have suggested that brain chemistry is at the core of these disorders in which case emotional disorders and conduct disorders are expressive of the same underlying dysfunction (Raines, 1993). This is obviously important from a policy implementation perspective since these theories would recommend different procedures to rectify emotional disorders in children. Those from the position of child

maltreatment would recommend removing the child from their environment and the biological position would be to clinically diagnose the disorder and treat it with medication. These issues notwithstanding, the effect of emotional disorders on aggressiveness is further analyzed in phase II and a clearer picture emerges.

Hyperactivity, was not proposed by Gottfredson and Hirschi (1990), as a cause of delinquency but one of its subcomponents - impulsivity - certainly is and it has a significant direct effect on aggressiveness. While not surprising, this has been a central focus of the debate in the literature and, as expected, these results support Gottfredson and Hirschi's position. However, just as in emotional disorders, the causality of hyperactivity on aggressive behaviour is a central concern that needs to be addressed. We are faced with the same dilemma discussed with emotional disorders in that there are advocates of a biological origin and those who suggest an environmental influence. As in the case of emotional disorders, examining the effects across age categories provides more insight into these issues since it is virtually impossible to assess them at the moment.

Hostile parenting, as suggested by most social control criminological theorists, has a direct effect on aggressiveness. In fact, while this analysis has been primarily focusing on quantitative research, Fleisher (1995)

provides a salient analysis of the lives of street youth which gives some insight into the massive effects of dismal parenting strategies. Fleisher (1995:17) draws a crucial and disturbing picture of the lives of his informants as he shows that early childhood experiences of brutality and neglect are rampant among "street hustlers"¹⁵.

Consequently, it is not surprising that we find hostile parenting to have a significant effect on aggressiveness, however, as we will demonstrate later, there appears to be good theoretical grounds for examining an interactive effect of hostile parenting since Fleischer shows that, at the extreme end of the "troubled child" continuum, parenting strategies are immensely important.

The final significant variable in this model is prosocial behaviour. Once again it should come as no surprise to find this relationship, but it is surprising that the effect does not have very much impact. That is, a one unit increase in the prosocial score, results in the odds of being aggressive to decrease by a factor of only 10.1 percent. We will see in phase II of this design that there seems to be good reasons for this seemingly small effect.

At this point, we can see that external validity can be reasonably assumed. There is strong evidence that the results found in this analysis are not different, or surprising, than much of the previous research. Moreover,

one of the most interesting conclusions from these data is that three independent components constructed for the analysis separately contribute something significant to the explanation of conduct disorders in early adolescence.

Contributors of Property Offenses

In most cases, the effects that are significant in the aggression model, are identical to those found in the model of property offenses. Unfortunately, it was not possible to repeat the mean property offense scores for boys and girls across age categories since this information was not collected. However, we do present the same multiplicative analysis for the 10 and 11 year olds and the results are highly consistent. In the following approach, we will not reiterate the above analysis, but rather discuss the anomalies between the models. The most striking difference between the models is found in the structural component. The number of children in the household does not show any direct significant effect on property offenses. Not only is this to be expected because the "victims" of the conduct disorders are seen as different between the models, but this also lends support to the earlier conclusion that the number of children in the home is not a causal factor but a contribution through opportunity. Considering then that this analysis is concerned with the genesis of conduct disorders in early adolescence, it may be fruitless to continue further examination of this variable. However, for

future models examined, we retain this construct so as to keep the analysis as consistent as possible. Moreover, viewing the age effect of this variable is theoretically important and interesting.

The structural variable having both biological parents, is significant. Is this a result of the non-significance

	(1)	(2)	(3)	(4)	(5)
<i>Structural</i>					
Children/Household	1.04			1.05	
Schooling of Parent	1.02			1.10	
Schooling of Spouse	1.03			.991	
Household Income	.658*			.619*	.633*
Income Adequacy	.951			.961	
Biological Parents	.568**			.819	.766**
Currently Working	.996			.945	
<i>Individual</i>					
Hyperactivity		1.74**		1.57**	1.54**
Emotional Disorder		1.43**		1.31**	1.32**
Prosocial Behaviour		.926**		.953*	.955*
Age		.966		.941	
Gender		1.34*		1.28	1.39*
<i>Social Control</i>					
Parental Depression			1.14*	1.01	1.01
Family Functioning			1.04	1.03	
Social Support			1.01	1.05	
Positive Interaction			.991	1.00	
Hostile Parenting			1.46**	1.21**	1.26**
Consistent Parenting			.963	.979	
Punitive Parenting			1.11**	1.12**	1.10
Child Care			1.13	1.11	
Friends in Trouble			.478**	.606**	.647**
-2 LogLikelihood	4393.5	4485.7	4391.7	4124.5	4328.0
Chi ² (improvement)	106.5	859.2	609.3	974.5	993.00
Significance	.0000	.0000	.0000	.0000	.0000
BIC	-81.93	-841.7	-577.7	-901.3	-958.3
Pseudo R ²	.024	.192	.139	.236	.230
Number of Cases	3238	3286	3243	3060	3189

Notes: See Appendix 1 for variable information.

** p < .0001

* p < .001

of the previous variable? Theoretically the answer would have to be no. Sampson and Laub (1993) suggest that the

amount of supervision given a child is inversely related to their delinquency. Consequently, because these dependent variables seem to measure different constructs, this finding is not at all surprising. However, much has been written about the ability of alternative families being capable of raising non-delinquent off-spring (see Wilson, 1993:157-163). The evidence does not generally support this conclusion. The traditional family form appears as a prophylactic against property offenses. It should be noted that these findings are of a probabilistic nature, certainly not deterministic, and we must consider that there are underlying qualities of the "nuclear" family that are often found in the alternative families. Unfortunately for some of these children, it seems that, on the whole, these alternative situations are not as effective at promoting non-delinquent behaviour.

In relation to the other variables in the model, there are slight increases in the effects of hyperactivity, emotional disorders, and prosocial behaviour while there are slight decreases in the effects of having no friends in trouble, and hostile parenting versus the model examining aggressive behaviour. In addition, household income and punitive parenting gain importance in their individual models, but are not significant in the full model. These differences, while significant are not deemed to be substantively different. Therefore, we conclude that these

models, are virtually identical. The correlates of aggression are more or less the same as the correlates of property offenses in this ten and eleven year old sample of Canadian children.

Internal Validity

Since we have concluded that the model examining aggressive behaviour is similar to the model examining property offenses, and both aggressiveness and property offenses are deemed to be indicators of conduct disorders in early adolescence, we are confident that there exists within this analysis a reasonable level of internal validity. Moreover, the threats to internal validity that Goldenberg (1992:269) addresses do not appear to be relevant to these data. With an understanding that we appear to have an increased level of accuracy with these data, we can move more confidently through the remaining results of the study.

The Debunking of Specialization

According to Cohen (1955), Blumstein et al, (1988a), and others who undertake research in the area of the "career criminal", it is suggested that the types of activity that these individuals engage in are unique and need special explanations of this behaviour (i.e. white collar crime, gang activity, etc.). However, as Gottfredson and Hirschi (1990:93) clearly point out, "good research" clearly presents evidence to the contrary. Moreover, the "survival of such ideas may be found in the interest of the

politicians and members of the law enforcement community who see policy potential in criminal careers" (p. 92). Since we have discovered that at least two types of conduct disorders in children are virtually identically constructed, this study lends support to those who have found that there are "many manifestations of" of a propensity to engage in criminal behaviour. Moreover, while only speculative at this point, once these children are followed over the next number of years, our position is that it will continue to be those children currently engaging in these conduct disorders that will be involved in future conduct disorders. Empirically however, it would be methodologically inappropriate to draw this conclusion and therefore, this issue must be addressed in follow-up studies of these children.

PHASE II

Effects across Age Categories: Stability

As promised, the effects across the age categories are examined to determine whether or not there are any differences in the effects between age cohorts. It must be noted that these groups represent different samples of children across Canada and it would be improper to infer that the processes effecting one age group results in behaviour of another group. However, as we will illustrate, patterns of effects are clearly evident across the age categories and, while speculative, we must address these

TABLE 4: LOGISTIC REGRESSION EXPONENTIAL COEFFICIENTS OF AGGRESSION ON STRUCTURAL, INDIVIDUAL AND SOCIAL CONTROL DETERMINANTS (TRIMMED) ACROSS AGE CATEGORIES.

INDEPENDENT VARIABLES	AGE								
	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	ALL
<i>Structural</i>									
# of Children 0-17 in Both Biological Parents	1.53** 1.52	1.01** 1.08	1.42** .510**	1.26 .703	1.26 .718	1.35** .745	1.16 .617	1.67** .721	1.34** .789
<i>Individual</i>									
Hyperactivity	1.60**	1.55**	1.36**	1.39**	1.49**	1.36**	1.44**	1.38**	1.43**
Emotional Disorder	1.53**	1.29**	1.59**	1.59**	1.46**	1.43**	1.17**	1.49**	1.43**
Prosocial Behaviour	.997	.946	.947	.985	.940**	.952	.911**	.942	.953**
Gender	.980	1.28	1.58	1.94**	1.17	1.76**	1.40	1.11	1.35**
Age									.927**
<i>Social Control</i>									
Family Functioning	.952	1.00	1.03	1.00	.966	1.00	1.10*	1.00	1.00
Hostile Parenting	1.62**	1.61**	1.46**	1.40**	1.24**	1.40**	1.48**	1.29**	1.43**
-2 LogLikelihood	2405	2140	2132	2061	2084	1958	2013	1906	16753
Chi ² (improvement)	531	424	463	376	361	365	416	369	3243
Significance	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
BIC	-505	-402	-451	-376	-337	-358	-397	-344	-3191
Pseudo R ²	.221	.200	.224	.195	.174	.196	.211	.194	.193
Number of Cases	1801	1668	1685	1653	1660	1619	1659	1562	13307

Source: NLSCY - See Appendix 1.

** p < .0001

* p < .001

patterns as systematic similarities that are theoretically justified by what Gottfredson and Hirschi argue as stability. However, the true test of stability will only be supported when further longitudinal data are available.

Table 4 represents the trimmed effect model of the structural, individual, and social control components for each age group, four year old to eleven year old Canadian children gathered in the NLSCY. Basically, the findings are impressively similar to those in the previous models. The effect of age is tested in the final column and suggests that while statistically significant, in relation to figure 4, substantively it is not very important since the coefficient is quite low (.927). Unfortunately, data were not gathered concerning friends in trouble for these age groups and this variable was eliminated from the analysis. The significant effects remain generally intact for each age category that include: the number of children in the same household, hyperactivity, emotional disorders, and hostile parenting. However, gender was not a significant contributor to the examination of the 10 and eleven year old group, but does seem to play a significant role at age seven and again at age nine. Moreover, the effects seem to be quite strong in both cases, but an explanation of this anomaly is elusive. At age seven, eight, and ten, we see a significant decrease in the effect of the number of children in the household which may be a contributing factor,

however, at age nine, there does not appear to be any differences between these effects and the earlier results. Are there any reasons to believe that there is some dynamic process happening at these ages? Or are we to assume that there are measurement errors that are not readily apparent? Unfortunately, these questions cannot be answered with the data available. The NLSCY investigators do not indicate that there are any problems with these age categories so we should for the moment err on the side of caution and suggest that future analyses should be cognisant of these anomalies and track them with these subsequent groups coming into and out of these ages groups.

Another interesting situation arises with prosocial behaviour. In the first two analyses, prosocial behaviour was significant, yet across the age categories it is insignificant. As discussed in chapter 2, the alpha level of this variable is quite low and the non-significance could be an artifact of a poorly constructed scale. On the other hand, there is some evidence that prosocial behaviour is not instilled in children until the later ages and this is exactly when the variable becomes marginally significant. As will be illustrated in the section on gender, overall mean prosocial behaviour scores rise with age. The lack of effect could be a result of a socialization process by which children must develop these behaviours.

On the other hand, the effects of hyperactivity,

emotional disorders, and hostile parenting levels remain relatively constant across all age categories. It is true that they fluctuate somewhat, but overall, the fluctuations are not extreme. We must however, question whether these fluctuations are due to different patterns or processes that occur at different ages. Once again, the available data do not permit this kind of analysis, but because we can observe that the fit statistics appear to be constant (along with the multiplicative effects), it is probably not unreasonable to conclude that across each age, the effects on aggressive behaviour are approximately the same as was found in the earlier analyses.

Returning to the central aim of this section, do these results show that there exists stability in the effects on aggressiveness across the age categories? With these results, it is difficult to tell if these effects are stable, however, one thing is clear: the identical components that explain aggressiveness in four year olds, explains aggressiveness in all other age groups. From this evidence, we are confident in the conclusion that, contrary to the age-crime curve that shows an increase in delinquent behaviour during adolescence and continuing to rise in the teen years, conduct disorders are a phenomenon that begin very early in life, and those things that cause these behaviours are observable at an early stage in an individual's life.

As a result of discovering that the effects of aggressiveness are relatively stable across age groups, a further, more theoretically important concern arises. Gottfredson and Hirschi (1990) argue that the propensity to engage in antisocial behaviours is also stable across the life-course. With these data, we can only speculate on this proposition because the data are not longitudinal and therefore each age group represents a different population. However, as in figure 4, as we examine the means scores across the important predictor variables, we are in essence constructing a synthetic cohort effect. In the following analysis we examine the age and gender mean scores for hyperactivity, emotional disorders, prosocial behaviour, and hostile parenting.

Figure 5 represents the mean scores of hyperactivity across each age category. We can observe a decline in mean hyperactivity scores across age groups. At age four, the mean score is 5.1 whereas at age eleven the mean score is only 3.94. This shows a significant ($t=6.8$) 25 percent decline in hyperactivity across age. This evidence lends massive support to the Gottfredson and Hirschi argument in that if, as they suggest, the hyperactive, impulsive individual who has low self-control is more likely to be engaging in the conduct disorders, then any decline observed in hyperactivity will be directly associated with a decline in aggressiveness. Unfortunately, the reasons why this

decline occurs would only be speculation at this point.

Figure 5

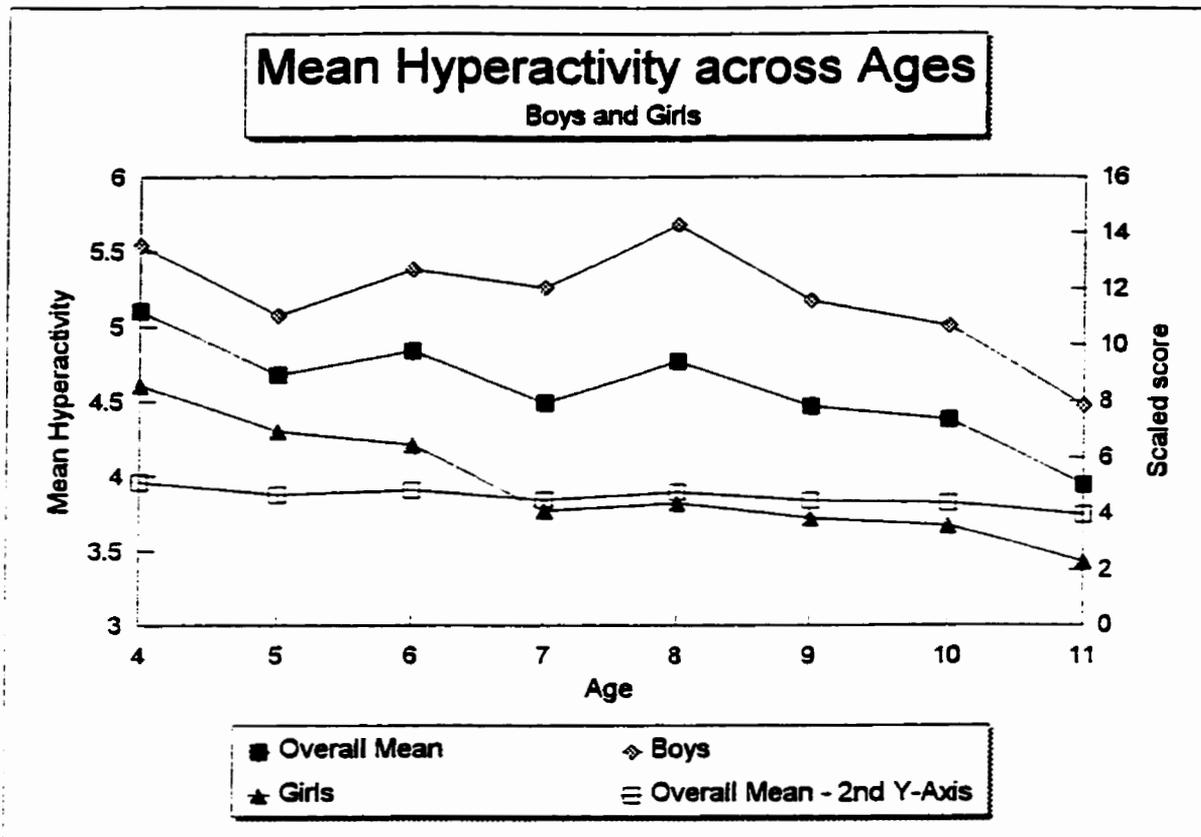
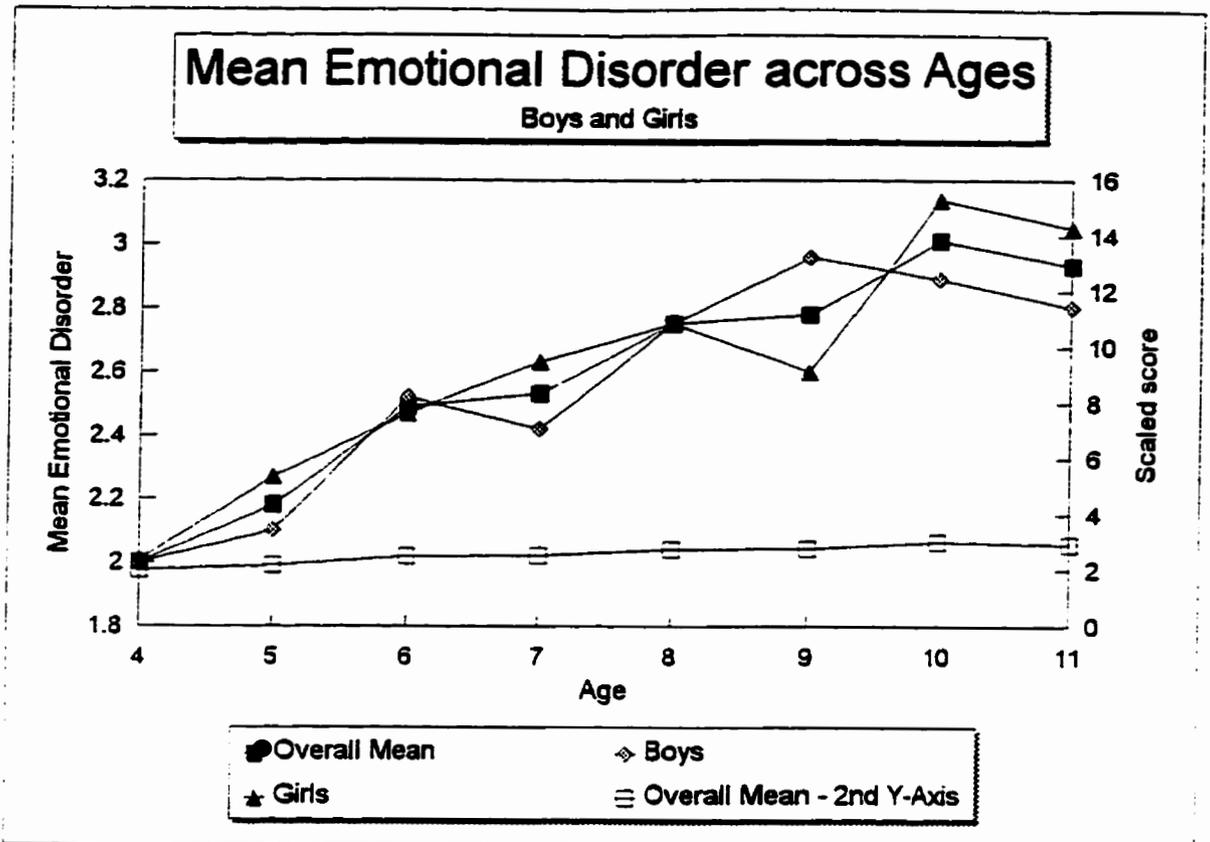


Figure 6 represents the mean emotional disorder score of the children across age categories. This evidence show that there is an increase in emotional disorder across each age group starting at 2.0 for age four and rising to 2.93 for the eleven year olds. This finding is exactly opposite to the expected finding since we have hypothesized that an increase in emotional disorders would result in an increase in aggressiveness. This 46.5 percent increase in mean emotional disorder scores requires consideration. While these changes in means scores are statistically significant, (t=-9.9), they may not be substantively significant.

Figure 6

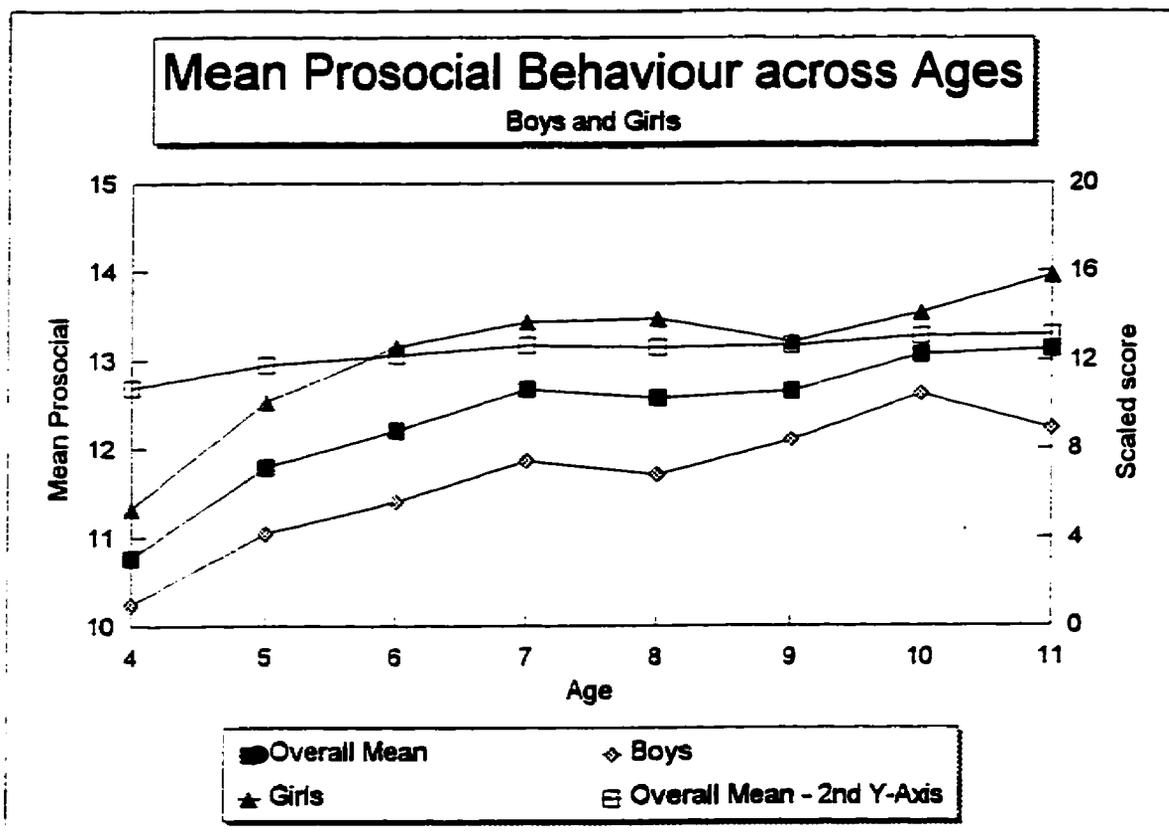


Returning to Figures 4 and 5, we can see that the overall means depicted by the second Y-Axis, indicate that, across the age categories, the mean score line is relatively level. Further, we may be able to postulate that these results are an artifact of the PMK's differential ability to observe these traits as they change across the age categories. Once again however, we can only speculate about these explanations and ask the reader to appreciate the complexity of these relationships.

In Figure 7, we see that the prosocial behaviour score also increases across the age categories. This phenomenon would help explain why aggression would decrease across the

age categories. As with the other effects, we can only speculate on the reasons for increases in mean prosocial changes but it seems very reasonable that

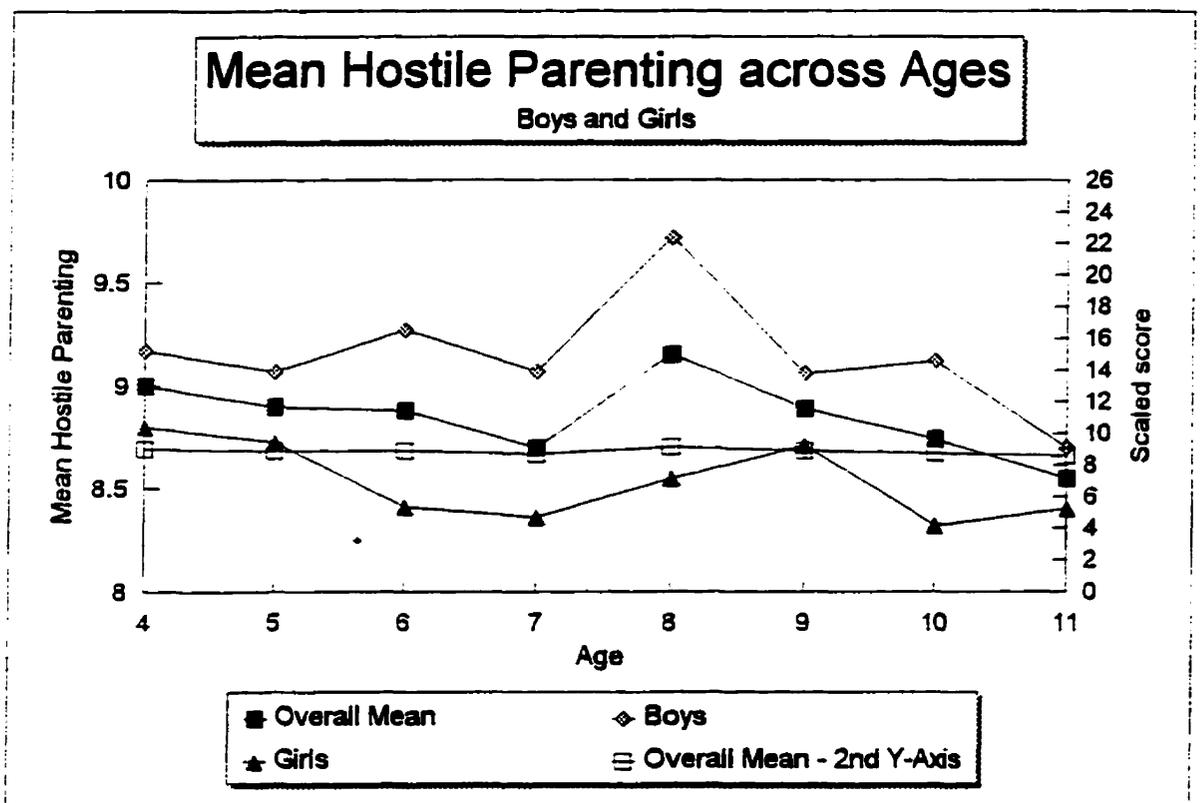
Figure 7



as children mature, they develop socially. However, the interesting discovery is not that prosocial score increase, but that they increase so little. At age four the mean score is 10.76 and rise to only 13.12; an increase of only 22 percent (statistically significant $t=-15.4$). This suggests that by age four, children are already very much socially developed. This is exactly what we would expect from the theory proposed by Gottfredson and Hirschi who suggest that the window of opportunity for parents to

socialize their children begins very early in life and ends at about age eight. If we examine the right hand Y-Axis in Figure 7, we see that there is a rise at the earlier ages and that the means level off between age seven or eight. In fact, there is not any statistically significant ($t=-2.9$) change from age eight to age eleven (only about a two percent increase).

Figure 8



Finally in Figure 8, the mean scores of hostile parenting are reported. Hostile parent appears to decline across the age categories beginning at 9.00 for the four year olds and declining to 8.55 for the eleven year olds. This small but significant ($t=5.4$) change may help explain

the decrease in aggressive behaviour. However, what is not clear in this analysis, is the causal sequencing. Does a decline in hostile parenting cause aggressive behaviour to also decline or does a decline in conduct disorders alleviate some parental tension that results in a decline of hostile parenting? While this cannot be determined from these data, Fleischer's (1995) study may help to shed some light on the sequencing of causality. From his work and from evidence from Smith and Thornberry (1995), systematic patterns of abuse have been shown to have a direct impact on delinquent behaviour. Consequently, from these data, we will conclude that, in accordance with other research, the more plausible explanation of the declines in mean aggressive scores are a result of similar declines in hostile parenting.

From this evidence then, what can be said about the stability theorem? Certainly in the early stages of childhood, stability does not exist. Remember however, as children pass through different ages into their teen years, delinquency rises and peaks at approximately age 17 (See Gottfredson and Hirschi, (1990), and Sampson and Laub (1993) for an in-depth discussion on the age-crime curve). Because delinquency rises during teen years, and we find that conduct disorders decline at earlier stages in life, the evidence seems contradictory. On the contrary, this suggests that in earlier stages of life, as Gottfredson and

Hirschi (1990:95) clearly argue, the propensity to engage in criminal activity occurs "in the absence of effort" on the part of the parents to reduce undesirable behaviours. What we may be seeing in these data are the efforts of parents to reduce these behaviours. Just as expected, the early years represent the "window of opportunity" for the reduction to occur. The evidence in this study clearly show that across different age groups, children engage in lower levels of conduct disorders.

Effects across Gender Categories: Are Boys and Girls Different?

Figure 4 shows that at every age, the mean aggression score for girls is always lower than for boys. Moreover, systematic patterns of declines across the ages is also evident. If these data did not produce these results, as discussed earlier, our study would be "prima facie suspect". In fact, with the exception of emotional disorders, girls and boys show significantly different mean scores for hyperactivity, prosocial behaviour and for hostile parenting. Consequently, it is not surprising that the mean aggression scores for girls is, in all cases, lower at every age. However, when we observe Figure 6, the mean scores of emotional disorders for both girls and boys are virtually identical. This brings us back to the dilemma that was encountered in the examination of the stability theorem with regard to emotional disorders. Since we expect to find

increasing aggression with increasing emotional disorders, how do we explain this reversal? The finding that both boys and girls are scored the same on this scale helps to unravel this complexity. As was speculated above, emotional disorders could be a result of what Raines (1993) would suggest as a chemical imbalance within the brain. We might even expect that if this is a biological phenomenon, there would be no inherent reason to expect boys and girls to differ. Moreover, there would be no reason to expect that any socialization strategies such as a decline in hostile parenting to effect this phenomenon. But because this is only speculation in this study, more research must be conducted to draw this conclusion. Moreover, these speculations do little to explain why emotional disorders seem to rise across the age categories. This is one of the most puzzling findings in this study and consequently we advocate much needed continued investigations.

Since we can see that boys and girls differ systematically on hyperactivity, prosocial behaviour, and hostile parenting, this may explain why gender fails to show significant effects in the regression analysis. It seems that these predictors are factoring in the gender effect already, and therefore, the gender coefficient itself shows as non-significant.

PHASE III

The Interactive Association between the Family and the Child

When we examined hostile parenting and aggression, there appeared to be questions about the direction of effects between these variables. Does hostile parenting cause aggression or is it the other way around? Further, is there any strong reason to believe that there might be an interaction effect occurring between hostile parenting and hyperactivity? That is at different levels of hostile parenting, are the effects of aggression on hyperactivity significantly different? As discussed in the first chapter, there seems to be a theoretically sound reason to test whether there is an interaction between the individual contributions of conduct disorders proposed by Gottfredson and Hirschi (1990) and the family control processes offered by Sampson and Laub (1993). Table 5 is constructed to examine these effects. In the first column of Table 5 we can compare the results of the interaction effect with the final column in Table 4. We can see that the BIC statistic's show a difference of 11 which leads us to believe that there is decisive evidence that an interaction effect is present (Raftery, 1995). Consequently, we must avoid analysis of the main effects and move to examine the models separately. Model one in Table 5 shows the effects on aggressiveness for those who score lower than one standard deviation below the mean hostile parenting scale.

Model 2 shows the effects on aggressiveness for those

TABLE 5: LOGISTIC REGRESSION OF AGGRESSION ON STRUCTURAL, PSYCHOLOGICAL, AND SOCIAL CONTROL DETERMINANTS WITH INTERACTION EFFECTS BETWEEN HOSTILE PARENTING AND HYPERACTIVITY.				
INDEPENDENT VARIABLES	INT	(1)	(2)	(3)
<i>Structural</i>				
# of Children	1.347** (.298)	1.434** (.360)	1.262** (.232)	1.459** (.378)
Both Biological Parents	.787** (-.239)	.653* (-.427)	.948 (.054)	.648** (-.434)
<i>Psychological</i>				
Hyperactivity	1.734** (.551)	1.618** (.481)	1.473** (.387)	1.339** (.292)
Emotional Disorder	1.435** (.361)	1.321** (.279)	1.508** (.411)	1.453** (.374)
Prosocial Behaviour	.954** (-.047)	.963 (-.038)	.967** (-.034)	.911** (-.094)
Age	.927** (.076)	.988 (-.012)	.911** (-.093)	.915** (-.089)
Gender	1.354** (.303)	1.419* (.350)	1.288** (.253)	1.433** (.360)
<i>Social Control</i>				
Family Functioning	1.002 (.002)	.973 (-.027)	1.020 (.019)	1.006 (-.006)
Hostile Parenting	1.681** (.519)			
Hostile Parenting by Hyperactivity	.959* (.042)			
-2 LogLikelihood	16763	2962	8284	4151
Chi ₂ (improvement)	3243	337	901	537
Significance	.0000	.0000	.0000	.0000
BIC	-3202	-309	-871	-509
Pseudo R ²	.193	.114	.109	.129
Number of Cases	13307	3675	6601	3031

Notes: See Appendix 1 for variable information.

** p < .0001

* p < .001.

Log-odds coefficients in parentheses.

who score between one standard deviation below the mean and one standard deviation above the mean on the hostile parenting scale. Model 3 show the effects of those scoring higher than one standard deviation above the mean hostile parenting scale.

Model 2 shows those who score around the mean on the hostile parenting scale. The results are identical to the

previous analysis. However, those at the extreme ends of hostile parenting scale, alter the effect coefficients. Model 1 shows that when those parents who are not hostile are isolated, the hyperactivity effect increases from the main effects model. On the other hand, when those at the high end of hostile parenting are isolated, the hyperactivity effect decreases. These results suggest that there is an interaction between these variables, which would lead us to advocate that this phenomenon be investigated further. We would conclude that hostile parenting aggravates the existing disposition of hyperactive children to exhibit conduct disorders such as aggression.

CHAPTER FOUR: CONCLUSION

Now that we have examined the data, the proverbial trees have been exposed. However, we now have to consider what the proverbial forest looks like. There are substantive issues to be addressed, some measurement issues that warrant discussion and finally, future research consideration will be reviewed. From this it is hoped that the field of criminology has been advanced such that some of the issues within the debate are resolved.

Measurement Considerations

Given the soundness of the current methodological approach, it may seem inappropriate to discuss any further re-analysis. However, the NLSCY have gathered additional information that could be extremely valuable for further analysis. They gathered additional information from the 10 and 11 year old children by using self-reports and they gathered information from teachers and principals about the children. Some of this information has not yet been released and could not be incorporated into this study. Consequently, we recommend that, once released, re-analysis may prove to be very beneficial particularly the data respecting the child's self-reported level of social functioning.

In addition, because some of the variables in this study have skewed or poisson distributions, re-analysis of these data could be useful by using a different statistical

technique that accounts for these types of distributions. The choice of logistic analysis restricts variance on the dependent variable and loses a great deal of subtlety in the statistical analysis. Alternatives such as Generalized Least Squares techniques may permit a more precise measure of the contributions of the exogenous factors to conduct disorders. However, we expect that the conclusion drawn will not differ significantly with respect to any portion of this study other than the speculations about the interactive effects model. In addition, since this model is of significant import to the future of criminology, we must recommend additional research.

Substantive Considerations

From this study it is very clear that hyperactivity, emotional disorders, and hostile parenting are central contributors to conduct disorders in early adolescence. Moreover, the importance of these findings are that these contributors appear to have origins in distinctly different disciplines. Hyperactivity is generally considered to be a psychological phenomenon, hostile parenting a sociological phenomenon, and emotional disorders a possible biological phenomenon. Therefore it is imperative that criminology move in the direction of becoming a multi-disciplinary, multi-approach field of study. Further, while this study uncovers the foundation of a multi-disciplinary perspective, the task of discovery is only beginning.

More specifically however, the multi-approach perspective cannot be pursued in disciplinary isolation. That is, biologists, psychologists, and sociologists must work in conjunction with each other because the findings in this study suggest that the contributions of each approach may interact. If this proves to be the case, the ramifications for the advancement of criminology could be massive. In fact, this could be the impetus for a hybrid discipline that will revolutionize the way we view crime. To date the best example of this perspective is that offered by Wilson and Herrnstein in their work Crime and Human Nature. However, they too approach the field with disciplinary biases. Consequently, we advocate a pluralistic criminology that examines developmental issues, from structural, biological and social control perspectives.

What this will offer, we believe, is a more comprehensive understanding of how the many manifestations of crime can be explained. For example, why do men in all cultures and across all time periods engage in criminal behaviour to a greater extent than women? In this analysis, we are at an advantage because we have analyzed data prior to the massive hormonal changes that occur between boys and girls. However, we continue to find that boys and girls engage in aggressive behaviour at a significantly different level even at very early stages in childhood. Is this caused by biological, sociological, or psychological

phenomenon? Unfortunately, because this is a secondary data analysis, we are limited to a descriptive analysis in which speculation is always in danger of testing the reader's tolerance. However, given massively important questions surrounding these issues, we have had to speculate, particularly on the issue of interaction between parenting style and child characteristics.

Future Research

In this analysis, we have attempted to uncover the genesis of conduct disorders in early adolescence. We believe that we have successfully shown that there are primary determinants of this behaviour and these determinants are relatively constant across different age groups. However, future research must be conducted to examine whether these relationships remain throughout the life-course, and whether these relationships exist prior to age four.

As with any secondary data analysis, we have been limited by the data collected (in this case by the investigators of the NLSCY). Therefore, it is recommended that data be gathered both in the later stages in life and in the earlier stages in life. By using this study as a template for these analyses, more effective conclusions about the process from early conduct disorders to engaging in criminal activities can be drawn.

A final note regarding interaction between disciplines.

Public policy decisions demand solid research if they are to be effective tools in shaping society. If the preliminary results found in the third phase of this study prove to be conclusive at some later date, the effects will be enormously helpful in the hands of the decision-makers. That is, no longer will public policy have to be guided by the separate disciplines, but rather they will be guided by an integrated approach that can illuminate not only the distinct causes of crime, but the relationship between these contributors. Ethically, we do not see how future research can abstain from this challenge.

NOTES

1. Wilson and Herrnstein (1985) provide evidence that suggests prisoners are more mesomorphic and endomorphic (shorter and heavier, and muscular and fat) and the Gluecks found delinquents to be more mesomorphic and less ectomorphic (Wilson and Herrnstein, 1985, p.87-88).
2. Fred Nullin is a subject in the Glueck data who had been a very active delinquent in his teenage years. He had a record of five arrests as a juvenile. For further information see Sampson and Laub (1993) p.218.
3. Shover and Thompson (1992) use twelve variables in their model which subsequently does not produce a great deal of explanation in the variance. In fact, they report that their model may only be "correctly predicting" about 63.8 percent of the time. While there are no set rules for these issues, it remains that these results require further investigation before strong conclusions and inferences can be drawn.
4. Negative emotionality is defined and measured as a combination of aggression, alienation, and stress reaction scales.
5. Low constraint is defined and measured as a combination of traditionalism, harm avoidance and control scales.
6. They conclude that research supporting increased delinquency for victims of maltreatment has been exaggerated (p. 196). Inappropriately, they suggest that maltreatment could result in weak familial and institutional ties but it would seem that the causal order is more probably quite opposite.
7. In addition, according to Simons et al (1994), there may be some reason to believe that the "two routes" to delinquency are different for males than for females.
8. The six components that make up "self-control" include an inability to "defer gratification", a tendency to lack diligence, tenacity or persistence, a tendency to be adventuresome, a preference for physical activity rather than cognitive activity, self-centredness, and a minimal tolerance for frustration (Grasmick et al., 1993, p.8)
9. This represents about 26 percent of all households in Canada.
10. The frequency distributions can be obtained through the AIX system at The University of Calgary. The Codebook and Manual are in the /data directory or can be loaded by request through DRAT.

11. While some variables that might add to the resolution of the debate were not collected by the investigators of the NLSCY, other variables have been suppressed for confidentiality purposes. Moreover, some variables that were available were not used because they presented methodological problems of reliability and validity.
12. For a complete breakdown of the categories see NLSCY Manual 1997, p.69.
13. 12,581 respondents out of 22,831 report having \$40,000 or more household income.
14. For a full discussion of maximum likelihood regression estimation models see Pedhauzer (1982), Demaris (1992), Berry (1993), and Knoke and Burke (1980).
15. Street hustlers in Fleisher's study are young male prostitutes.

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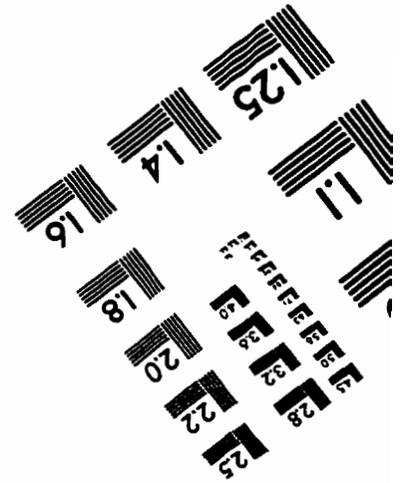
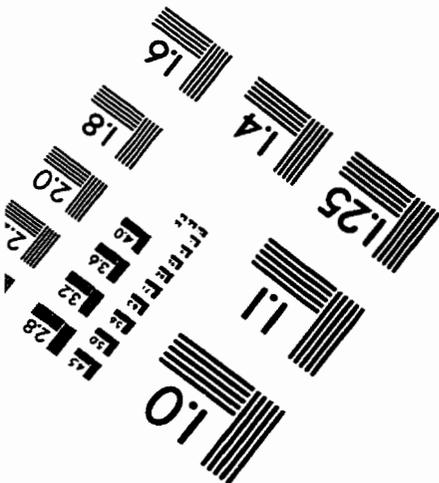
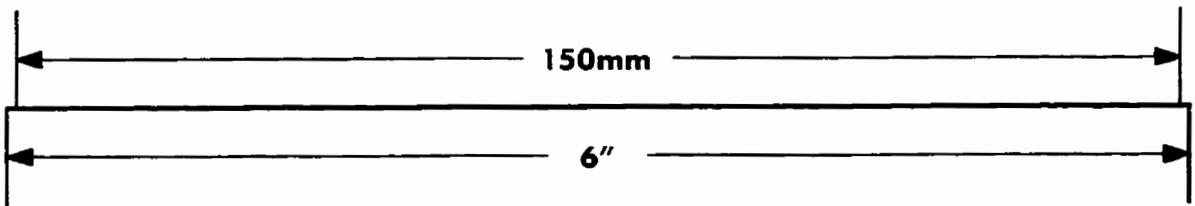
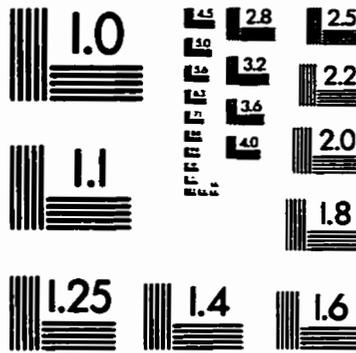
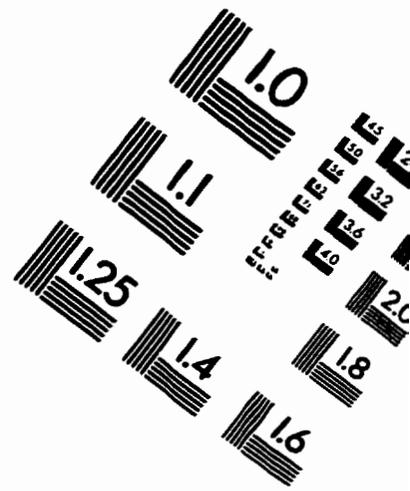
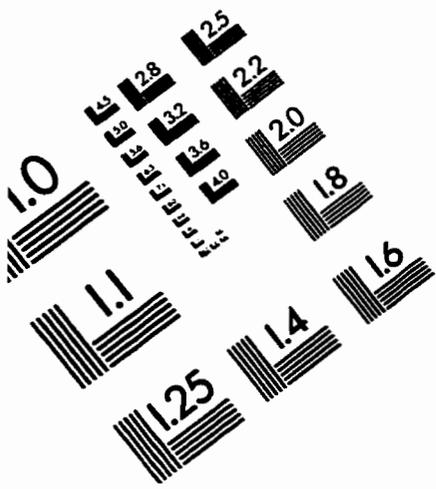
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IMAGE EVALUATION TEST TARGET (QA-3)



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1653 East Main Street
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